



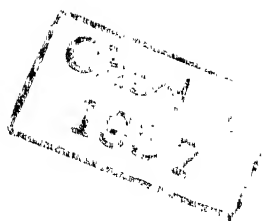






# EUROPE

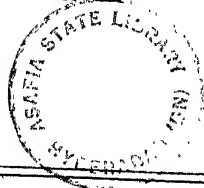
A  
GEOGRAPHICAL SURVEY



By **CHECKED - 1963**

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## PREFACE

THE importance and the human complexity of Europe make the study of that continent of special interest to all students of the human sciences. They also arouse a curiosity as to why European society has taken its present forms. This book is designed to consider modern European life from the geographical point of view. That is, it deals with the adjustments of European man to his natural environment as well as his adjustments of that environment. It is frankly recognized that geographical relationships do not provide a complete explanation of modern European society. Historical, social and ethnic factors have all played important parts, and all would have to be considered before one could arrive at any complete survey of social causation. In the present study the author has frequently drawn upon these related fields in order to render more understandable the present human development in the various portions of the continent.

This book is designed as a text for students of geography of college or university grade and as a source of useful information for all those interested in European life or European problems. Both of these groups of readers are primarily interested in the major problems of the European peoples, in the cultural landscapes to be found in various portions of the continent and in the relations of the natural environment to these problems and landscapes. To satisfy these interests requires that attention be given to the geographical background of the major European problems. It also requires that a picture of life in each region be presented and that these regions be small enough so that each possesses a considerable degree of cultural individuality.

In the carrying out of these ideas the continent as a whole is first considered from the point of view of its world relationships and its physical and human characteristics. Attention is then given to the economic, political and cultural activities of the European peoples in an effort to show the position which the continent holds in each. The geographical reasons for the relative economic and cultural importance of each major division of Europe are then studied.

The detailed regional treatment is on the basis of political units, as these are frequently characterized by at least partial social and economic unity, and as most data are available on this basis. The political units are in turn broken up into physical regions sufficiently small so that each

possesses a high degree of geographical unity. These subdivisions receive the principal emphasis as in this way the most intimate picture of European man's relationships to his environment can be secured. The limitations of space prevent a detailed discussion of all such relationships. Accordingly, only those which have been of major importance in influencing human development have been considered.

The names of the political units and physical features are spelled in accordance with the recommendations of the United States Geographic Board, and are largely those officially used in the nations in which they occur. The former names, or those in common use in the United States and Great Britain, are inserted in parentheses after the official name where it first appears in the text.

The author wishes to express his appreciation for the assistance of numerous geographers in both the United States and Europe. Dr. W. L. G. Joerg, of the American Geographical Society, kindly provided letters of introduction to many of the leading European geographers. Among the latter, the following were especially kind in making available the latest geographical material concerning their own and neighboring countries, and in adding to the author's information from their own rich stores of knowledge: Professor Fritz Nussbaum, of the University of Bern; Professor F. Siebert, of the University of Frankfurt; Professor Alfred Ruhl, of the University of Berlin; Professor L. van Vuuren, of the University of Utrecht; and Professor P. L. Michotte, of the University of Louvain.

Professor Frank E. Williams, of the University of Pennsylvania; Professor Raymond E. Murphy, of the Pennsylvania State College; and Professor John E. Orchard, of Columbia University, read portions of the manuscript, and their excellent criticisms and suggestions proved most helpful. Mr. Otis P. Starkey, of the University of Pennsylvania, read the entire manuscript, and his suggestions as to style and method of presentation were exceedingly valuable.

March, 1934

J. F. BOGARDUS

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PART ONE

THE CONTINENT AS A WHOLE

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## CHAPTER I

# THE IMPORTANCE OF EUROPE



EUROPE is one of the smaller continents, yet for the past two thousand years it has led the world in accomplishment. Here a capable population and a favorable environment combined to produce cultural, political and economic achievements unequaled elsewhere. However, the influence of these accomplishments has not been confined to the continent. One of the most remarkable features of the history of the past four centuries has been the extension of European civilization throughout the entire world. As a consequence, Europe today exerts the most profound influence over all mankind, and is the continent to which America is most closely bound by material and cultural ties.

From the time primitive man first migrated over the Mediterranean land bridges or crossed the steppes of the Ural-Caspian Gap until the appearance of the civilizations of Krêtē (Crete) and the cities of the Grecian Peninsula, living conditions were backward and human progress slow. While early man spread to all portions of the continent, it was to be expected that civilization would first develop in the sympathetic environment of the Mediterranean region. Here the mild temperatures were attractive, and the absence of cold winters simplified the problems of living. The winter rainfall was sufficient for the growth of such drought-resisting crops as the olive, for the raising of some cereals, and for the providing of pasturage for flocks of sheep and goats, while it did not permit a dense forest growth which might have hampered the development of early man. To the north were the high mountain barriers which sheltered the region from the cold winds of northern Europe, and which provided partial protection from invasion. To the south lay the Mediterranean and the Ægean, with their innumerable islands and peninsulas, which, with the absence of frequent summer storms, made them ideal training grounds for the early navigator.

These seas also served as a pathway connecting the various settlements on their shores, thus aiding the development of commerce and the spread of culture. They likewise provided easy communication between the European shore and the older civilizations of Africa. Other

ancient centers of civilization were within reach. Across the narrow, sunken river valleys of the Bosphorus and the Dardanelles lay Asia; while two depressions, the first formed by the Tigris and Euphrates Valleys and the Persian Gulf, and the second by the Gulf of Suez and the Red Sea, gave access to the civilizations of southern and eastern Asia. In response to these and possibly other geographical factors, European civilization started in the Mediterranean region; and because of the unifying influence of the seas, it was to be expected that the civilization of any one center would spread to other portions of the area. Greece and Roma (Rome) became the great centers of European culture and successively spread Hellenic and Roman civilization throughout the basin of the Mediterranean.

Although northern and western Europe were gradually absorbing the culture spread from Roma and becoming increasingly active, it was not until the rising power of the Turk cut the normal channels of trade between the Mediterranean and the east, and until trade with the New World brought into major importance the North Atlantic routes, that the dominating influence of southern Europe began to wane. Gradually such sections as England, France, The Netherlands, Denmark, Norway and the German States began to gain at the expense of the Mediterranean area. The more inhospitable environment of the north developed initiative and industry, while the cooler and more varied climate proved advantageous from the point of view of human health and energy. The rugged coast line with its many harbors, the stormy seas of the north, and the fish which these seas contained led to the development of a group of sailors superior to those trained on the Mediterranean. The many areas of fertile soil, combined with the moderate temperature and well distributed rainfall, permitted a more varied agriculture than was possible in southern Europe. The location was also favorable with respect to trade with North America and other land areas, and this, together with the many good harbors and able seamen, led to the exchange of goods and ideas. The peoples of northern Europe were capable, and, by making use of these geographical advantages, rapidly advanced this section until it held an important position in European affairs.

The Industrial Revolution gave added importance to the natural resources of the north, and clinched the commanding position of that portion of the continent. Unlike most sections of the Mediterranean Basin, northern and central Europe had important resources in the form of coal, iron, other minerals and forests which were essential for industrial development. These resources, coupled with such other

advantages as a more favorable location for trade, better possibilities for agriculture, and a more stimulating climate, have led to the present-day domination of northwestern Europe in European affairs.

European peoples and ideas soon leaped the confines of the continent and spread to all parts of the world, until Europe became the center of cultural, political and economic life. Beginning in the fifteenth century, The Netherlands, England, Portugal and France began to establish trading posts on the coasts of Asia and Africa. Gradually these trading posts expanded into colonies, until ultimately all of Africa, excepting only Ethiopia and Liberia, came under European political domination. Important sections of Asia also came under the control of European powers. England assumed control of India, France seized Indo-China, Spain secured the Philippines, and the Dutch laid claim to most of the East Indies, while Russia gradually extended its empire eastward through Siberia to the Pacific. Following the voyages of Columbus, the new worlds of North and South America came under the domination of European powers, and later England colonized Australia and New Zealand. During this period many strategic harbors and most of the islands of the sea also passed into the hands of the principal European powers. Thus European colonies were established on every continent and in every section of the known world. Although some of these colonies have since secured their independence, European peoples and cultures still exert a profound influence on the life of these new states.

The explorer, missionary, trader and colonist spread European culture, forms of government, language and trade. Not only have Europeans spread their own ideas and techniques, but they have spread native customs and products which appealed to them. For example, Indian tobacco and corn, Andean potatoes, Brazilian manioc, Asiatic wheat and rice, Asiatic horses, African folk tales, Hawaiian music, and countless other non-European items have been diffused by Europeans.

Europe has continued to be responsible for such a large share of the advanced ideas of the world that the term "European" has become almost synonymous with "civilized" or "modern." The United States and Japan are the only two areas outside of Europe which have made recent and important contributions to civilization. Modern democracy had its birth in England and on the continent, and modern legal structures have their roots in Roman law. Although Christianity is not of European origin, it achieved its greatest development there, and it has been largely through European effort that its principles have been spread throughout the world. In the fields of art, literature, music,



education and philosophy Europe stands supreme. Modern science originated in Europe, and Europe and the United States have made the greatest advances in scientific discovery and invention. It has only been since the World War that Europe has had to acknowledge a serious rival in the fields of industry and trade. Thus throughout the past two thousand years Europe has gradually extended its influence and has given to the world the great majority of the cultural and economic contributions which go to make up modern civilization.

Nothing could better illustrate European predominance than the World War. It would have been impossible for a war between the greatest nations of any other continent to have so influenced mankind as did this one between the nations of Europe. It spread rapidly until the peoples of every continent took sides and eighteen nations were engaged on one side and four on the other. The conflict influenced not only those people actively engaged, but the great majority of others throughout the world. Possibly the primitive savage of the African jungle or the Eskimo on the Arctic rim may have been only slightly affected, but all others had their lives modified in many ways by this European struggle. Even after the conflict was ended, normal conditions on the other continents were impossible until Europe recovered from the shock. Thus today North America and the other continents are vitally interested in European recovery and stability, for it influences them in many ways. This well illustrates the fact that Europe, more than any other continent, holds in its hands the destiny of mankind.

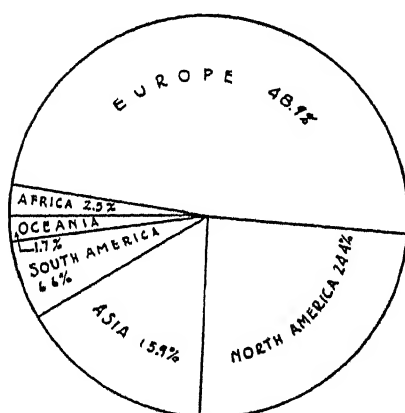
#### THE IMPORTANCE OF EUROPE TO THE UNITED STATES

Economic, political and cultural ties bind the people of the United States more closely to Europe than to any other continent. As a consequence, Europe has exerted and continues to exert a profound influence over every phase of American life. A knowledge of Europe and European affairs is thus essential to a clear understanding of many American problems.

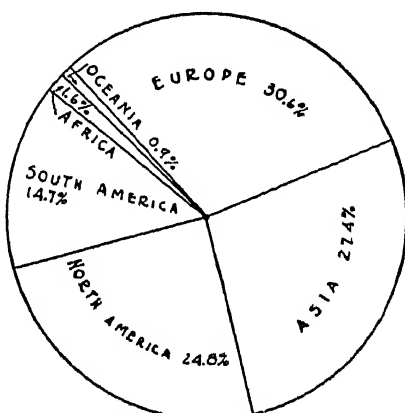
**Economic Importance.**—Economically Europe is more important to the United States than is any other continent. With it Americans carry on a large portion of their foreign trade. Its public and private financial obligations to the United States are greater than those of any other continent. European ships carry a considerable portion of American overseas trade, and American tourists spend more money in Europe than in the rest of the world combined. Consequently the prosperity of the United States rests in no small part upon an intelligent treatment of

these relationships, and such treatment, in turn, rests upon a sound knowledge of European conditions.

European countries are the chief markets for American exports, although they are less important in this respect than prior to the World War. During the three-year period from 1928 to 1930 inclusive, they took an average of 46.6 per cent of all the exports of the United States. They are likewise the principal source of imports entering this country. Thus for the same three-year period, they furnished 30.2 per cent of all imports into the United States. As American interest in foreign trade is steadily increasing, it becomes more and more desirable to have a clear understanding of Europe and European affairs.



Continental destinations of exports from the United States, 1931, on the basis of value. Percentage of total exports. (U. S. Department of Commerce.)



Continental sources of imports into the United States, 1931, on the basis of value. Percentage of total imports. (U. S. Department of Commerce.)

Europe is also of major economic importance to the United States because of the financial obligations of that continent to this country. These take various forms. The so-called war debts owed by various European governments had a funded value in 1930 of approximately \$11,522,354,000.00. In addition, private long-term investments amounted to \$4,432,000,000.00 at the end of 1932. Short-term obligations also amount to large sums, but are difficult to estimate accurately. Not only are these obligations of great economic importance, but to an increasing extent they have influenced the political relations of the United States with the leading European powers.

Other economic relationships with Europe which are of considerable importance arise out of the earnings of foreign vessels engaged in carrying American overseas trade. The earnings of such vessels, the

TABLE I

PRIVATE LONG-TERM AMERICAN INVESTMENTS ABROAD, BY GEOGRAPHICAL AREAS, AT THE END OF 1932

(U. S. Department of Commerce)

Area	Total
Canada and Newfoundland.....	\$ 3,999,000,000
Europe.....	4,432,000,000
Mexico and Central America.....	966,000,000
South America.....	2,982,000,000
West Indies.....	1,209,000,000
Africa.....	129,000,000
Asia.....	1,002,000,000
Oceania.....	428,000,000
Total—World.....	\$15,147,000,000

majority of which were owned by Europeans, amounted to \$447,000,000.00 in 1930. American tourists in Europe also spend huge sums annually. No accurate data concerning these amounts are available, but the United States Department of Commerce estimates that in 1930 the total expenditure of American tourists going overseas amounted to some \$309,136,000.00, most of which was spent in Europe.

**Cultural Relationships.**—The cultural relationships between Europe and the United States are quite as close and quite as important as the economic relationships. American culture either originated in Europe or has been built upon European foundations. The people of the United States have long looked to Europe for inspiration in such fields as art, music, literature, the drama, education and philosophy. The Europeans were not only leaders in pure science, but they took the findings of their scientists and adapted them to the service of transportation, manufacturing, agriculture, forestry, health, education and other activities. Thus modern scientific agriculture, scientific forestry, modern medicine, and many improvements in manufacturing and communication are of European origin. America has drawn upon these discoveries in the building of its present-day society, and within recent years it has made important contributions of its own which have been adopted throughout Europe. Europeans have thus exerted a greater influence on American cultural life than have the peoples of any other continent.

**Political Importance.**—Close political ties bind the United States to Europe. The American form of government is largely European in background. This country has engaged in great military and diplomatic struggles with European powers. The most important international organizations with which it deals, such as the League of Nations, the World Court, the International Labour Office and the International

Postal Union, have their headquarters in Europe and their most active members are European states. Europe contains all the major nations with which the United States has relations, with the single exception of Japan. These nations have colonies on every continent and in every portion of the world. Consequently America's relations with large and important sections of every continent depend ultimately upon its relations with Europe. Economic and political interdependence are gradually breaking down isolation, and are forcing the United States into closer relations with all other areas. As Europe contains the majority of the great nations of the earth, and as its political influence is world wide, such vital matters as peace or war, and America's position within the family of civilized nations, must depend upon its relations with the European powers.

**Study of Europe.**—The place which Europe holds in the modern world and its relations to the United States make a study of that continent most interesting and important. It arouses curiosity as to the reasons for this eminence. Some of these reasons relate to historic and human elements and lie outside of the fields usually ascribed to geography, but many of them find their bases in the environmental factors which are of special interest to the geographer. A study of these factors should yield many of the reasons for the past and present importance of Europe and of European nations, and should also provide a basis for estimating the future importance of the continent. Accordingly, it will be the task of this book to portray life in the various regions, and to seek to unearth the factors which are responsible for these types of life. The units studied will, for the most part, be nations. This is done because most data are available by countries, and because nations exert a profound influence upon the people within their boundaries and the people with whom they come in contact. Thus the continent as a whole will be considered first, and then each country will be taken up and studied from the point of view of those interrelationships between life and environment which make up modern geography.

(See end of Chapter III for bibliography.)

## SITUATION, RELIEF, RIVERS AND SOIL

THE achievements and problems of the European peoples are intimately related to their highly varied physical environment. A knowledge of that environment is thus a necessary preliminary to an understanding of European life.

## SITUATION

The name Europe indicates something of the position of the continent. It is supposed to have been derived from the Assyrian *ereb* or *irib*—land of the setting sun—in contrast to *asu*—land of the rising sun. Viewed from ancient Assyria, Europe was, indeed, the land of the setting sun, while toward the east was Asia, the land of the sunrise. Europe is thus the western portion or, as it is frequently called, a western peninsula of the great Eurasian land mass. It is bounded by water except in the east, where the Caspian Sea furnishes the only natural boundary. The gentle slopes and indefinite crest line of the Ural Mountains form an imperfect boundary line; in fact, the actual border between the two continents does not follow this crest line entirely, but swings east to include the mineral-bearing territory lying east of the Urals. In the historic Ural-Caspian Gap any natural boundary is totally lacking. Thus the real justification for the classification of Europe as a separate continent is historical and cultural rather than physical.

It is the Sahara and not the Mediterranean which separates Europe from Africa economically and culturally. The eastern boundary is likewise hard to define, for there is a broad transition zone where the cultures of Europe and Asia meet and mingle. In this area any definite boundary line must be largely arbitrary and fixed by political expediency. Cultural Europe has thus expanded beyond the physical limits of the continent, and has encroached on the territories of its neighbors.

Europe lies nearly at the center of the world land masses. This situation has aided its contacts with other people and other lands, whether those contacts be cultural, political or economic. It also lies

largely in the belt of the prevailing westerly winds and on the eastern margin of the Atlantic Ocean. These factors, coupled with the fact that most of its mountain areas run in an east to west direction, permit the winds to carry moisture and the tempering effect from the ocean far into the interior of the continent. From the point of view of world location, Europe consequently enjoys certain advantages which are reflected in its cultural and economic life.

### SIZE

Europe is one of the smaller continents, as its area is usually estimated at approximately 3,750,000 square miles. When this is compared with the 17,000,000 square miles of Asia, or the 9,400,000 square miles of North America, its relative size is better appreciated.

### BORDERING SEAS

A glance at the map of Europe will show why it has been frequently called a peninsula of peninsulas. Its narrowness and irregular outline, with its numerous peninsulas and islands, are due to the development of a series of marginal seas. These seas have influenced European man through their effect upon communication and trade, and indirectly through their influence upon climate. The unifying influence which each has exerted has tended toward the creation of a common culture in the areas bordering its shores. Their geographical influences have been pronounced, although these influences have changed from time to time, depending primarily upon developments in navigation, communication and trade.

**The Caspian and White Seas.**—The Caspian and White Seas are of but slight importance. The shallow, European portion of the Caspian is icebound for a considerable period every winter, and its physical isolation renders it useless for any other than local trade. The White Sea owes its isolation to its latitude, and it too is closed by ice for several months every winter. In spite of these handicaps, considerable trade is carried on by some of the White Sea ports, especially Arkhangelsk (Archangel). The Baltic and the Black Seas are more important than the two just considered, but it has been the Mediterranean and the North Seas which have exerted the greatest influence upon man in Europe.

**The Black Sea.**—The southern group, made up of the Mediterranean and the Black Seas, carries the oceanic influence for approxi-

mately 2500 miles into the heart of Europe. The warm, salt, shore currents entering the Black Sea through the Bosphorus keep such harbors as Odessa and Sebastopol open almost the entire year. The Black Sea also gives access to the rich grain lands of the Ukraine and southern Russia, to the mining and industrial areas of the Donets Basin, and to the oil-producing region near Batumi. It has accordingly played an important part in the economic development of the territories which border it. The climatic influences of this sea are also of considerable importance. It tends to regularize climate and serves as a source of moisture. The effects of these influences upon various portions of its shores vary, depending upon the prevailing wind movement. The influence of the Black Sea upon its bordering areas has thus been considerable, but it has played a much less important part in European affairs than the Mediterranean, with which it is connected by the Bosphorus, the Sea of Marmora and the Dardanelles.

**The Mediterranean Sea.**—The basin of the Mediterranean forms a distinct natural region between the Alpine highlands to the north and the desert regions to the south. The shape of the sea, being long and narrow and stretching far into the interior of the continent, has increased its importance for trade. The mild climate with the absence of cold winters and frequent storms made it an ideal home for early man, and its importance as the home of early European civilization has already been considered. The fact that the European coast line is more irregular and has more harbors than the African shore has tended to promote its commercial and cultural domination.

Each of the two basins of the Mediterranean has served to unify the cultural life of its shores. Throughout the Aegean and the eastern basin of the Mediterranean, Grecian culture spread and dominated, while in the western basin of the Mediterranean Roma was the cultural center, and today the Latin influence is dominant. Sicilia (Sicily), which separates the two basins, was held from time to time by each of the dominant powers. The Mediterranean was the center of maritime trade until the Turk cut the normal trade routes with the east, and until other routes were developed around Africa and with the New World. Later the opening of the Suez route renewed the importance of Mediterranean trade. Today the increasing economic importance of the Black Sea region of Russia and the development of French and Italian colonies in northern Africa are constantly adding to the commercial importance of this sea.

**The Baltic Sea.**—The northwestern group of marginal seas includes the North Sea and the Baltic, with its northward extension in

the Gulf of Bothnia and its eastward extension in the Gulf of Finland. The importance of the northern Baltic is lessened by the severe winters. North of Stockholm navigation is usually stopped from Christmas to Easter, and the Gulf of Finland is frequently frozen over for 150 days; during severe winters ice from the northern Baltic drifts as far as the Kattegat. During this period navigation is possible only through the use of ice breakers. There have been a few periods in recorded history when the Baltic froze over from shore to shore. For example, in 1658 King Charles X of Sweden marched his army across the ice to attack Russia. But in spite of these handicaps, trade in the Baltic has been important.

During the days of the Hanseatic League such ports as Stettin, Lübeck, Danzig, Visby and many others in the Baltic were among the leaders in trade. With the growing importance of the North Atlantic routes, and with the increase in the size of vessels which made it impossible to use many of the shallow harbors, the Baltic lost its former relative importance. Today, however, much trade is carried on: The timber products from Sweden and Finland, the iron ore of Sweden, and the products of western Russia, the new Baltic States and eastern Germany all make extensive use of this sea. The fishing industry and the numerous islands and harbors gave rise to a hardy race of sailors and have maintained the importance of the merchant marines of the Baltic powers. The unifying force of the Baltic on the cultural life of its bordering areas is also important. To the north and the west Swedish influence has been dominant, while the Teutonic Knights spread the Germanic influence east of the German borders to the shores of what are now the new Baltic States. The Baltic, by permitting ocean transportation to be extended some 1600 miles into the interior, and through its influence on the cultural and economic life of its shores, has played an important part in the life of northern Europe.

**The North Sea.**—The North Sea, the present center of the cultural and economic life of Europe, is so located that the nations bordering on it were ideally situated to take advantage of the growing North Atlantic trade. The numerous harbors and the fishing grounds of the Dogger Banks attracted many people to the sea, and the rough waters and frequent storms produced a breed of sailors unsurpassed throughout the world. These men were well equipped to take advantage of the favorable location of the North Sea and to carry on trade with all parts of the world. It was also these daring navigators who explored trade routes and established trading posts, thus laying the basis for future colonial empires.



Today the English, the Dutch, the Danes, the Norwegians, the French and the Germans are among the leading maritime peoples of the world. It is frequently said that a fishing and maritime community early tends to develop democratic institutions, so it is not surprising that democratic government originated in areas bordering the North Sea. The constant exchange of peoples and ideas which took place around this sea tended to promote common cultural development. For example, the present English people are descendants of invaders and settlers from many North Sea areas, and England has secured many cultural and economic contributions from this part of the continent. On the other hand, there is no North Sea power that has not been influenced by English trade and English ideas and ideals. Through favorable location, and through those factors which have tended to promote maritime development, the North Sea has thus exerted a profound influence over those nations bordering it, and has become the center of modern Europe.

### RELIEF

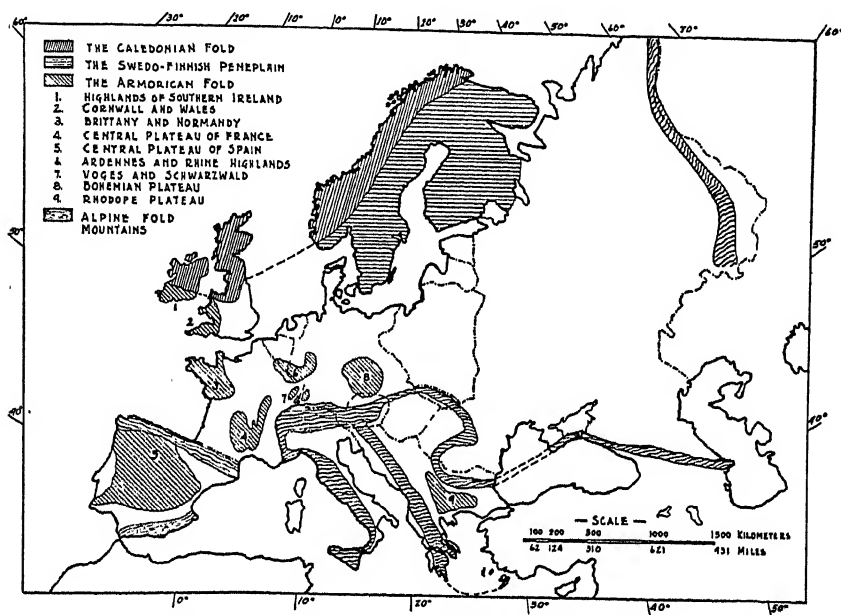
Diversity, greater than that found in any other area of equal size, is the keynote of the relief of western Europe. This variety of surface features has exerted a varying influence on human activity through its influence on such factors as climate, transportation, water power and ease of cultivation. To the geographer this heterogeneity of land forms is significant because of the influence which these features have had upon the peoples of Europe.

Europe may be divided on the basis of relief into east and west divisions. Eastern Europe is a great level or gently rolling plain, extending from the Carpathians to the Urals and from the Caucasus to the Arctic Ocean, and here uniformity of relief tends to cause uniformity of human response. Beginning with the Carpathians and extending westward to the Atlantic, Europe presents a great diversity of relief features: plains, plateaus, and old and new folded mountains; and each exercises an important influence upon human activity.

**Caledonian Fold.**—In general it may be said that the relief features of Europe run in an east and west direction, and in considering these features they will be taken up in turn from north to south. The most northern one is a group of old highlands, known as the Caledonian Fold, extending from southwest to northeast, beginning in the highlands of northern Ireland and including the highlands of Scotland and the Scandinavian highlands. They are thought to have once formed

the southeastern edge of an old continent which ran east and west across the north Atlantic, and which is frequently known as Atlantis. Combined, they cover a considerable area, the Scandinavian highlands being the largest mountain mass in Europe. For the most part they are formed of old hard rocks which are covered with poor soils, and consequently agricultural possibilities are limited, even in the valleys.

These highlands have been heavily glaciated, and even today the broad surface of the Scandinavian Mountains holds the largest glaciers in Europe, the Jostedalsträ Glacier being some 600 square miles in



The structure of Europe. (After Newbigin, modified.)

extent and the Svartisen Glacier having an area of some 400 square miles. Glaciation has had certain results which are important from a human point of view. It has been largely responsible for the fiord coast line of Norway, with its innumerable harbors and its great beauty. It has also resulted in the creation of lakes and waterfalls which have aided in the development of water power. These highlands are for the most part devoid of mineral wealth except for a little iron ore in the Scandinavian districts. While they serve as somewhat of a barrier to east and west transportation, yet glaciated valleys occur occasionally which permit cross communication. They also serve as a climatic barrier, as is evidenced by the difference in climate between the Swedish and Norwegian coasts. They are forested in places, but

there are large areas of bare rock and still greater stretches covered with heather and short bush growth of no commercial importance. The population of the Caledonian Fold is not great, but it presents many interesting responses to the environment of this relief feature.

To the southeast of the Scandinavian highlands lies the Swedo-Finnish peneplain, where the numerous lakes and incoherent river systems give evidence of intensive glaciation. Although this is a hard rock area it is covered in places, as in the Swedish Lake District, with



Tractors at work in the Ukraine. Note the remarkably level relief. (Courtesy of Sovfoto.)

fertile soil. This section is mostly forested, and the forests, together with important deposits of iron ore, constitute its chief resources.

**The Central Plain.**—To the south and west of this peneplain are to be found the shallow depressions of the North and Baltic Seas, and to the southeast of these lies the second major division of Europe, the central plain. The level or rolling expanse of this plain stretches from the North Sea to the Urals, and while it is narrow in the west, it widens toward the east to include the entire breadth of the continent. Only occasional glacial ridges break its monotony, although marshes interfere locally with agriculture and transportation.

Nature has endowed this plain with so many blessings in the form

of relief, climate, minerals, navigable rivers and harbors, that it has become the center of European economic activity, and contains a greater population than any other relief division of the continent. In spite of the fact that it has large areas of poor soil, it contains the major portion of European agriculture. On none of its numerous rivers does relief hamper transportation. Levelness also favors railway construction, as is evidenced by the fact that one may go by rail from Bordeaux to Moskva (Moscow) without passing through a tunnel or going over an elevation of over 600 feet. The drowned river mouths along its edge have given rise to such leading European ports as London, Anvers (Antwerp), Le Havre, Rotterdam, Hamburg and Bremen. The vast coal deposits along its inner margin have fostered the rise of the greatest industrial centers of the continent. The central plain has thus become a land of great commercial and industrial cities and thriving agricultural communities.

**The Armorican Fold.**—South of the European plain lie the folded remnants of a once great mountain range, now known as the Armorican Fold. These remains appear as isolated blocks scattered from Ireland and the Iberian Peninsula to western Russia. They include the southern highlands of Ireland, the Welsh Mountains, Cornwall, Brittany, the Central Plateau of France, the Spanish Meseta, the Ardennes, the Vosges and the Schwarzwald (Black Forest) and the Bohemian Massif. They vary in appearance, depending largely upon the resistance of the rock of which they are composed and upon the sinking of the surrounding land. Some present a sharp, bold front, such as the Cevennes and sections of the Spanish Meseta. In others erosion has reduced the mass to a peneplain formation, leveling off the crests and widening out the valleys until it presents a hill and valley appearance.

With the exception of a few places where limestone occurs or where volcanic deposits are found, as in the Central Massif of France, these old blocks are covered with poor soil. Consequently in most places agriculture takes the form of grazing or the raising of tree fruits and vines on the slopes. Where the underlying rock is of porous limestone, surface drainage disappears and a steppe type of vegetation occurs, while where surface water is plentiful forests occur and add an element of wealth to these regions. These blocks of the Armorican Fold interfere locally with transportation, as is the case in the Spanish Meseta, and in certain instances form excellent natural defenses, as is the case in the Ardennes and the Vosges. However, as they do not form a continuous chain, they interfere but slightly with transportation between northern and southern Europe. Few cities of any size occur on these

massifs, but the many valuable minerals which are found where they join the newer formations give rise to numerous industrial centers on their borders.

**The Alpine Fold.**—These Armorican remnants have played an important part in the life of Europe because pressure exerted from the north and south folded up against them the youthful mountains of southern Europe. The location of the massifs thus determined the direction which these folds took, and at places they were responsible for the breaks in this southern mountain system which have formed important passageways between northern and southern Europe. These folds, which stretch from the Pyrenees to the Caucasus, may be likened to great waves which broke around the base of the old Armorican blocks, and solidified. They include the Betic System of the Iberian Peninsula, the Atlas Ranges of northern Africa, the Balkan Mountains, the Pyrenees, the Alps, the Apennines, the Dinaric Alps, the Carpathians and the Caucasus.

Faulting has caused sections of the Alpine Fold to disappear, and has been responsible for the formation of the deep basins of the Mediterranean, the Black Sea and the southern part of the Caspian Sea. Faulting is also responsible for the fertile plains which occur in the bays which these mountains surround, such as the Hungarian and the Walachian (Wallachian) Plains. The various sections of this folded system differ as to appearance and character, and exercise varying influences over man. The Pyrenees and the Caucasus resemble each other in forming the most effective barriers to transportation, and in this respect the Dinaric Alps are not far behind. The Alps, which are high and narrow in the west and lower and wider in the east, prevent the cold winds of northern and central Europe from influencing the Mediterranean area; and although they constitute a distinct barrier to transportation, there occur passes such as the Simplon, St. Gotthard and the Brenner, over which important north and south transportation lines pass. The breaks which are to be found in the Rhône-Saône Valley and in the Danube Valley constitute, from a historical point of view, the most important lines of communication between northern and southern Europe.

The steep slopes, jagged crest line and perpetual snow fields of portions of these mountains make them world-famous for their beauty, and give rise to a tourist industry which plays an important part in the local economy. The raising of animals, with their annual migrations between the high Alp pastures and the lower valleys, forms the most important phase of agriculture, although on the lower slopes and

especially on the southern slopes air drainage and the sun's warmth give rise to the raising of tree fruits and vines. Such cultivation as occurs takes place in the glacial and alluvial soils of the valley bottoms, but the small amount of level ground limits the possibility in this direction. Large portions of these mountains are forested, and timber constitutes one of the most important resources of the region. However, in the western Alps much of the crest is above the timber line, and in other sections bare rock prevents tree growth, while among the Dinaric Alps the porous limestone is bare or gives rise to a semi-



A winter scene in the Carpathians. (Courtesy of the Rumanian Legation, Washington, D. C.)

desert type of vegetation. Another important resource of this region is its water power. The rainfall which ranges from moderate to heavy, the frequent glaciers and snow fields, the numerous lakes and the steep slopes afford ideal conditions for the development of hydro-electric power which, because of the absence of coal, is so much in demand in many of these regions. Unfortunately the folded mountains themselves contain few important minerals, although around their edges there is some development of the mining industries. As would be expected of a region of this type, the population is sparse except in a few sections such as portions of Switzerland, where the development of manufacturing has led to a considerable concentration of towns and cities.

**The Mediterranean Coastal Area.**—To the south of the folded mountains lies the Mediterranean; and because of these mountains the northern coast line of this sea is irregular, with numerous peninsulas, islands and bays which lead to many good harbors. They are thus responsible for the interest in the sea which has characterized many of the Mediterranean peoples. In places the mountains themselves touch the sea, as on the Dalmatian coast, but in other localities is to be found a narrow coastal plain. This plain is far from continuous, and in places occupies only a minor portion of the coast. The narrowness of the plain is responsible for the fact that it contains few long rivers, the Rhône, the Po and the Ebro being the only ones of any size. Toward the east, bordering the Ægean, the plain is broken and consists for the most part of isolated valleys of limited extent. This fact was partially responsible for the development of the small Greek city-state, and for the lack of political unity which characterized the early history of the eastern Mediterranean. In the western basin the plains are wider and more continuous, thus making for greater political unity and providing subsistence for a larger population.

The narrowness of the Mediterranean plain limits the amount of arable land, and because of the density of population in many sections all available land is utilized, even the steep slopes being terraced. Sections of the plain are rendered useless by the existence of swamps and marshes, part of which are natural and part of which are due to the past misuse of the land. Although this area was the scene of the early civilizations of Europe, it is handicapped in present-day economic competition, due to the absence of important minerals, especially coal and iron. The narrow coastal plain, with the great wall of folded mountains on one side and the sea on the other, offers only a limited hinterland for the development of commercial and industrial centers. Consequently it was to be expected that the greatest commercial cities would be located where gaps or passes made possible communication over the mountain wall with northern and central Europe; and such cities arose as Marseille, Genova (Genoa), Milano (Milan), Venezia (Venice), Trieste and Thessalonike (Salonika). Before the development of the North Atlantic trade the Mediterranean plain contained some of the leading nations and the most active ports in Europe. Historically this plain is one of the most important sections of the continent. However, changing trade routes, limited resources, limited amounts of arable land, and a climate which lacks stimulation have caused this region to advance less rapidly than northern and western Europe.

**The Ural Mountains.**—The only other major relief division of the continent is the Ural Mountains. These form, at least in part, the boundary between Europe and Asia, although as a boundary they leave much to be desired. Although from 4000 to 5500 feet high, the western approach is so gradual that on this side the streams are navigable almost to their sources. The eastern slopes are steeper and the Urals present a more mountainous appearance on that side. Although they do not constitute an important barrier from the point of view of human travel, they are a climatic barrier, and much typically European vegetation stops on their western slopes. They are one of the largest mountain areas in Europe, ranking second to the Scandinavian Mountains in size. The severe climate gives rise to a tundra type of vegetation in the north, and the lack of rainfall leads to a steppe type in the south. In the central part, however, the mountains are forested, and the fertile soils of the lower valleys lead to agriculture. Here also the existence of important minerals leads to the development of mining and industrial communities with their relatively dense populations. The industrialization of Russia may cause the mineral and timber resources of the Urals to be of greater importance in the future, thus attracting to the area a larger population and enabling it to take a more important part in European life.

Europe accordingly presents a diversity of relief forms which call forth a variety of human responses. This diversity is one of the factors which has enriched European life; the variety of products and variety of types of life to which it has given rise have each made their contribution to the cultural and economic life of the continent. In addition, the relief features have not been so situated as to isolate important areas or to influence climate adversely. Consequently the relief of Europe may be regarded as one of the physical factors responsible for the important position which that continent holds in world affairs.

### THE RIVERS OF EUROPE

**Navigation.**—Considering its size, Europe has an unusual number of rivers suitable for navigation. The Rhine is the supreme example of this type of river. The depth and width of its channel and its evenness of flow make it well adapted for navigation except at a few points where man has found it necessary to install devices for its regulation. Also it empties into the North Sea, thus running in accordance with the normal channels of trade. This combination of factors has made it the most used waterway in Europe. But it is more than a waterway; it





Relief map of Europe.

is a tremendous unifying force which tends to bind together economically and culturally the people of its valley. At one time it may have formed a natural boundary, but it is no longer a source of dispersion; it has become rather one of attraction.

The Volga is another river of the same type. It constitutes the great north and south route of Russian trade and is very extensively used for navigation. However, low water and ice limit its use during portions of the year. It also has the misfortune of flowing into a landlocked sea, and consequently navigation is most important between local centers along its course. Nevertheless, it has exercised a unifying influence over the peoples of its basin, binding them together into a cultural and economic whole.

The third major waterway is the Danube, but this river has the disadvantage of flowing contrary to the normal channels of trade; consequently, although it is extensively used locally for navigation, the amount of trade which follows its course to the Black Sea is limited. Within the upper and middle portions of its valley it also has led to the development of economic unity. Under the Austro-Hungarian Empire this unity had a chance to develop undisturbed. Today, the states which occupy this area have raised barriers breaking up the unity, and the result has been economic disorganization and political difficulty. Rivers of the same type but of lesser importance are the Don, the Dnepr (Dnieper), the Po, the Guadalquivir, the Seine, the Thames, the Oder and the Wista (Vistula). All of these are navigable and all are of some importance as commercial arteries.

The Rhône is slightly different in type. It is important not so much for navigation as for the fact that its valley forms the best natural highway through the mountains of southern Europe. Consequently, it has always served as an important avenue of trade between the northern and southern portions of the continent.

The submergence which took place in northern Europe deepened the lower portions of the river valleys and converted them into a series of estuaries which form excellent harbors. Some of the most important ports of the continent are located on these drowned river valleys. Among these, London, Liverpool, Glasgow, Hull, Cardiff, Le Havre, Anvers (Antwerp), Hamburg, Bremen and Stettin are the most important.

Malarial and unhealthful deltas are formed where most of the rivers flow into the Mediterranean. This is true of the deltas of the Rhône and the Po. The Maremma Marsh is south of the mouth of the

Arno, and the marshes of the Campagna, around the mouth of the Tiber, are additional areas of this kind.

**Water Power.**—The streams flowing from the Alps and the Scandinavian highlands are of major importance as sources of water power. The abundance of precipitation in these mountain areas, the prevalence of permanent snow fields, glaciers, and lakes which serve as natural storage reservoirs, and the number of falls and rapids which are increased by the glaciated character of these areas all combine to make them the most important sources of water power in Europe.

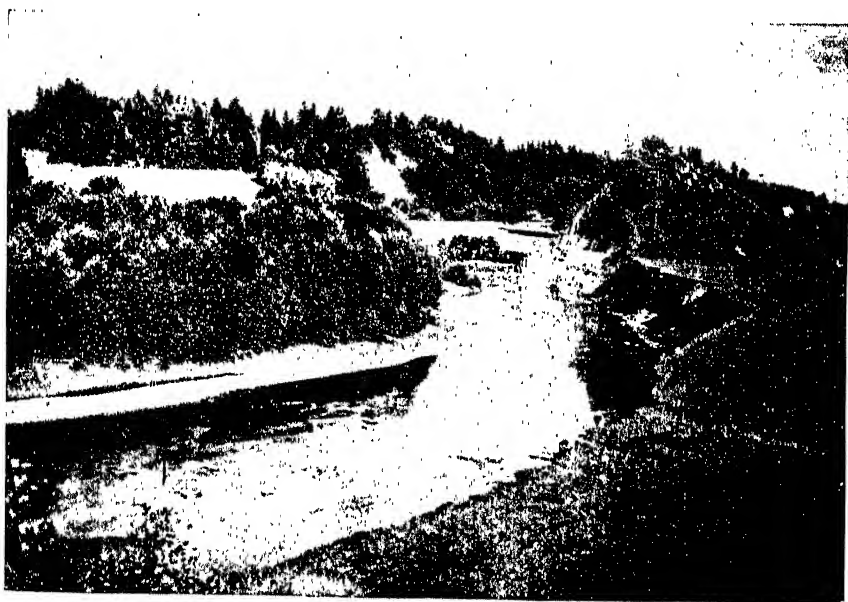
**Boundaries.**—For the most part, rivers form poor boundaries, as they tend to unite rather than separate the people on their two banks. Only where they are little used for navigation and where they are difficult to cross can they be regarded as natural barriers. The great marshes which border the Pripyat (Pripet) River cause that river to serve as a natural boundary between Poland and Russia. The Danube between Bulgaria and Rumania is also a fairly effective boundary, due to the existence of wide marsh lands bordering the river on the Rumanian side. However, such rivers as the Rhine, the Dnestr (Dniester) and the Maritsa are poor boundaries from political, cultural or economic points of view.

### THE INFLUENCE OF SOIL

Variations in climate, relief and geological history have given Europe an unusual variety of soils. These have enriched the life of the continent by giving rise to varied types of natural vegetation and agricultural development. They have also frequently stimulated man to improvements in cultivation and fertilization in order to increase or preserve their fertility.

**Northern Europe.**—The soils of northern Europe are almost never of local origin, having been transported to their present position either by glaciers or by streams. The influence of glaciation is most noticeable near the Scandinavian center of glacial activity. Around the edges of the true glaciated areas the ice-carried materials were deposited in the form of layers of sand, clay or gravel, and in terminal moraines consisting mostly of coarse rock particles. Few of these types were, of themselves, especially suitable for cultivation. The clays were damp, often sour, and difficult to cultivate. The sand and gravel dried out quickly and did not contain much available plant food. Consequently, large amounts of land exist in the European plain, especially those portions lying near the Baltic, which were not originally well adapted

to agriculture. Here, however, man has made large areas productive by systematic fertilization and scientific cultivation. Occasional areas of soil of natural fertility are to be found in this region. These usually occur where glacial clays are located near limestone regions, and where the limestone, either by glacial action or through other agencies of erosion, becomes mixed with the clay. Areas of this kind occur in portions of southeastern England and in parts of the Swedish plain. However, glaciation has had at least one beneficial effect. Here, as elsewhere throughout the world, by grinding up rocks and mixing the



A typical Lithuanian landscape. (Courtesy of the Consulate General of Lithuania, New York.)

surface and the subsoils it has added new mineral elements which tend to benefit the soil and make it enduring.

Throughout this region the alluvial soils of the river valleys and the deltas are frequently rich. Fertile and easily worked alluvium has been carried down by the streams and deposited over the unproductive clays that originally covered their valley floors. Thus such regions as the central Belgium plain, most of The Netherlands, and the rift valley of the Rhine became highly productive agricultural districts.

The heavy rainfall of the north has reduced the fertility of the soils through the leaching out of plant foods. It has likewise encouraged forest growth, and thus limited the amount of humus which the soil contains.

**Eastern Europe.**—The soils of the northern and central portions of eastern Europe are, for the most part, poor pod-soils which have to be used with great care if they are to remain productive. These soils are ash-colored, acid, and deficient in humus. This type prevails throughout most of the forest belt of Finland, Russia and the new Baltic States. The prevalence of dairying throughout portions of this area is in part a response to the poor soil conditions which exist. These conditions also lead to the growth of such crops as rye, barley and potatoes, which are adapted to the high acid content.

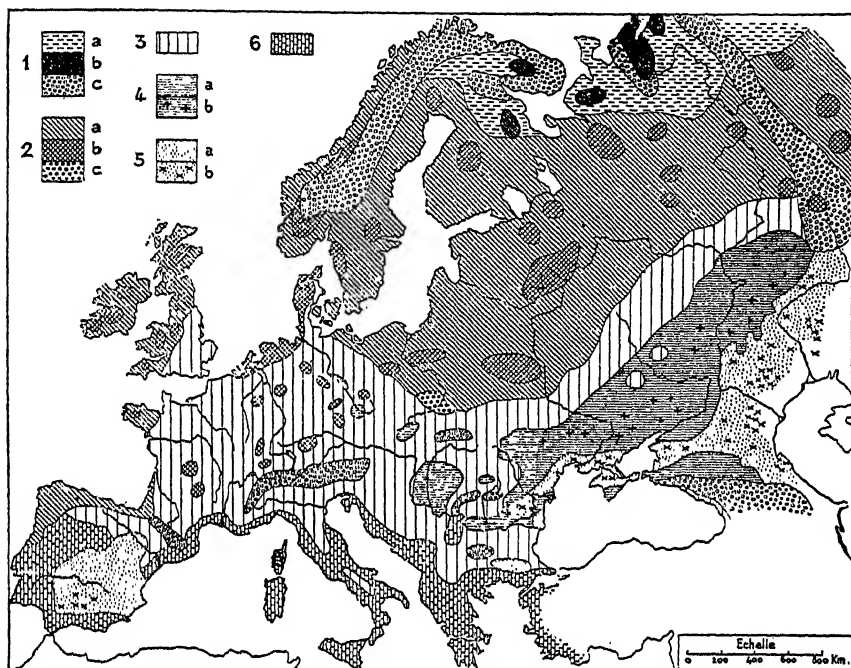
South of the forest belt in Russia lies the famous Black Earth region. Here the soils are composed mostly of wind-carried glacial silt and humus, and are reputed to be among the most productive soils of Europe, and, in fact, of the world. The heavy growth of grass which covers most of this area has added additional humus and given the soils the dark color from which the district takes its name.

In the extreme southeast of Europe, around the Caspian Sea, is to be found the only true desert area of the continent. Here the soils are rich in mineral plant foods due to the scarcity of rainfall, which means little leaching. The absence of vegetation covering, however, makes the soils deficient in organic materials. Where irrigation is possible the fertility of these soils leads to the production of abundant crops. Occasionally sections are found where the ground water has brought to the surface large amounts of soluble minerals injurious to plant life, and alkali or salt flats result.

**The Mediterranean Region.**—The level areas bordering the Mediterranean are covered with alluvial soils which, while fertile, are less lasting than the glacial soils of the north. Where natural vegetation has been removed on the slope, erosion is rapid and the soil is either very thin or removed entirely. This erosion is also frequently injurious to the lowlands, for it leads to the silting up of the lower stream channels and the consequent formation of malarial marshes. In such dry areas as southern Spain, southern Italy and southeastern Greece the high rate of evaporation and light rainfall have led to the creation of rich soils. Where irrigation is practiced in such an area the crop yields are high.

**The Influence of Man on Soil.**—Northern Germany and Denmark form the best examples of poor soil areas which have been made productive through scientific fertilization and cultivation. In these sections the soil consists of glacial deposits of sand, clay or gravel which are naturally infertile. A careful study was made of these to determine

what fertilizers were needed, what methods of cultivation were best suited to the existing conditions, and what crops were best adapted to the soil. The findings of these studies were employed in developing a system for the proper care and use of these soils, with the result that today these areas are highly productive. Denmark is one of the most prosperous nations of Europe, and almost its entire prosperity is based



Map showing the distribution of climatic soil types in Europe according to the zonal classification and particularly from Sibirtzev and Ramann. Key: 1, Soils of the Tundra: a, clayey and sandy tundra; b, peat-bogs; c, stony land; 2, podsolized soils, the very light-colored forest soils: a, podsoils proper; b, waste land and peat-bogs; c, rendzinas; 3, brown forest soils and degraded chernosem; 4, chernosem soils: a, chernosem proper; b, saline soils; 5, chestnut-brown steppe soils: a, chestnut-brown soils; b, saline soils; 6, soils of the Mediterranean region. (From "Agricultural Regions of Europe" by Olof Jonasson, appearing in *Economic Geography*, vol. 2, p. 39.)

upon its agriculture. Likewise the northern German plain yields nearly enough to make Germany independent from the point of view of food.

In the Mediterranean region are to be found examples of another influence of man upon soils. Here the removal of the forests from the more rugged areas, over-grazing on the hill and mountain sides, and the improper cultivation of the slopes have resulted in excessive erosion which not only removed much of the soil from the slopes but also injured some of the valleys in which the eroded materials were de-

posited. Thus the productive capacity of these regions has declined, and their agricultural prosperity has been diminished.

In eastern Europe and in some of the southern portions of the continent the practice of one-crop agriculture has reduced the fertility of the soil and consequently its capacity to produce crops.

Throughout all of Europe examples may be found where man has increased or diminished the capacity of the soil to yield crops. This influence of man upon soil is just as important a phase of geography as the influence of soil upon man.

(See end of Chapter III for bibliography.)

THE INFLUENCE OF CLIMATE, NATIVE VEGETABLE  
AND ANIMAL LIFE

## CLIMATE

EUROPE has a larger proportion of its area climatically suitable for advanced human life and development than has any other continent. The only regions unfavorable to man are a small desert area lying north of the Caspian Sea and a narrow strip of tundra bordering the Arctic Ocean. Throughout most of the continent the range of temperature is very small for the latitudes involved, the winters, except in the east, being mild and the summers warm but not too hot. The enervating heat of the tropics is lacking, and only in the narrow Arctic fringe is cold a serious handicap to human progress. Rainfall in most sections is plentiful and well distributed, although irrigation is necessary in portions of southern Europe because of the dry summers. Frequent storms cause a variability of climate which is stimulating to human health and energy, although again southern Europe is not as well situated as other sections. Local differences in climate are also common, due to variations in relief, and these lead to a variety of products and human responses. The climate of Europe thus exercises a beneficial effect on man whether viewed from its direct influence on his physical and mental well-being, or from its direct influence on plant and animal life and on transportation.

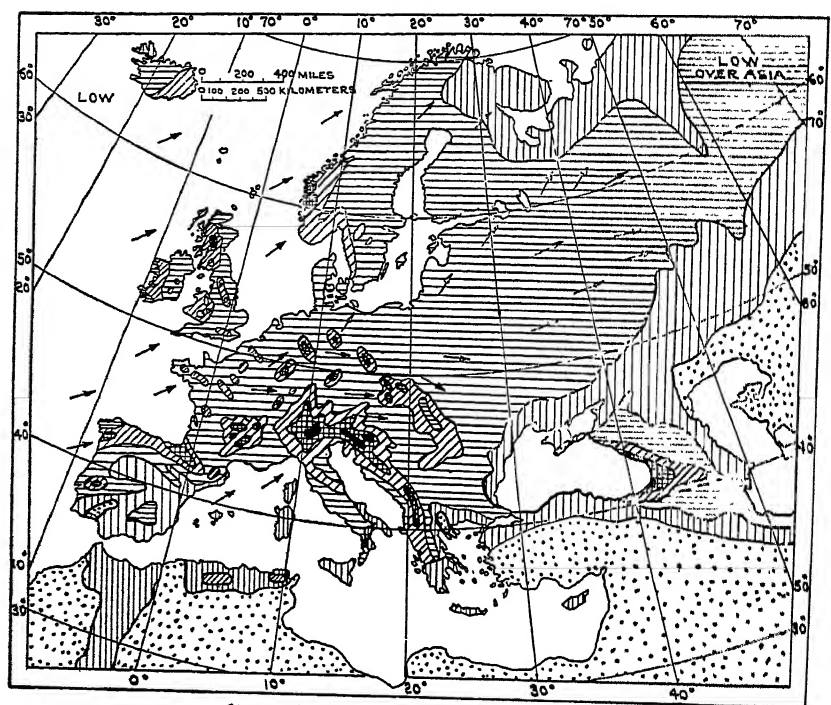
## FACTORS INFLUENCING CLIMATE

**Winds.**—Knowledge of Europe's relation to the wind belts is necessary to an understanding of its climate. Most of the continent lies in the belt of the prevailing westerlies. As a consequence the winds normally blow from west to east, carrying the moisture and the moderating influence of the ocean far into the interior. During the summer the influence of these winds is felt as far east as Moskva, but during the winter a great blanket of cold air hangs over eastern Europe and limits the distance to which they can penetrate. The cy-



clonic and anti-cyclonic storms which are characteristic of this belt bring precipitation and provide variability of weather. The westerly winds thus render most of the continent suitable for man by preventing extremes of temperature, providing necessary moisture, and giving that variation of weather so desirable for human health and energy.

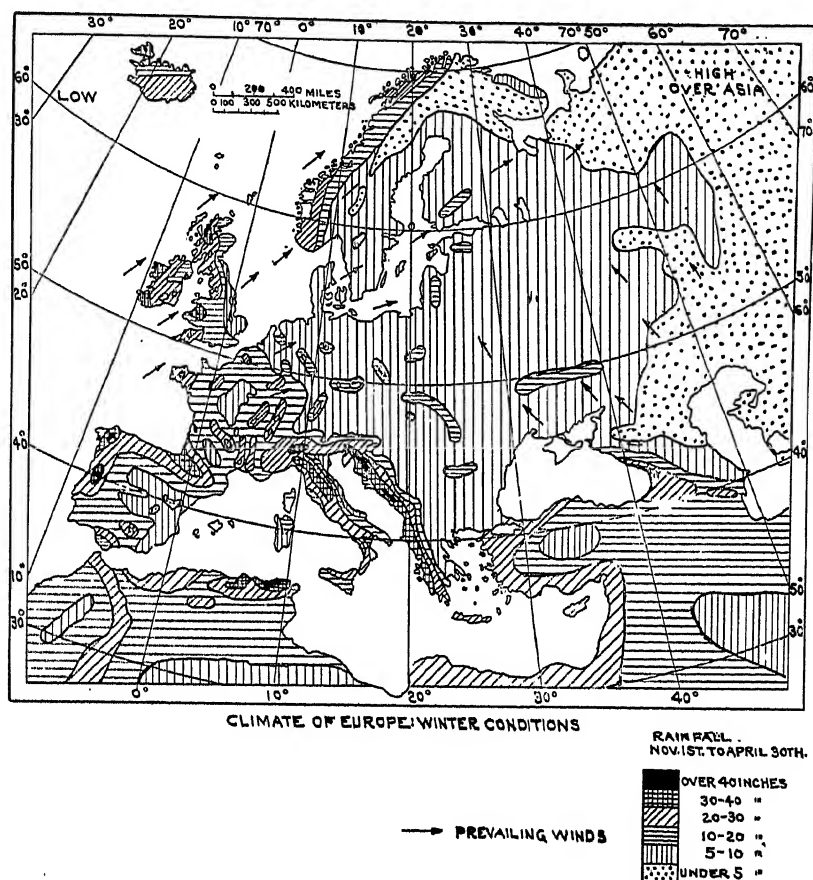
The portion of Europe bordering the Mediterranean is characterized by mild temperatures together with winter rain and summer drought.



The summer rainfall of Europe. (After D. H. Smith, modified.)

This is due to the shifting of the wind belts which causes this region to come under the influence of the prevailing westerlies in the winter and the horse latitudes and trade winds in the summer. The former bring precipitation and storms, while the latter bring the cloudless skies so typical of the Mediterranean summers. Unfortunately the summer droughts and limited variability make this region less suitable for human development than northern or central Europe.

**Location.**—Europe is fortunate in being located to the east of a great ocean, and in having its northern and western shores bathed by the North Atlantic Drift. These warm waters do much to moderate the temperature of the continent and provide it with moisture. The influence of the ocean is made more pronounced and is extended far inland by the numerous seas which surround and penetrate Europe.

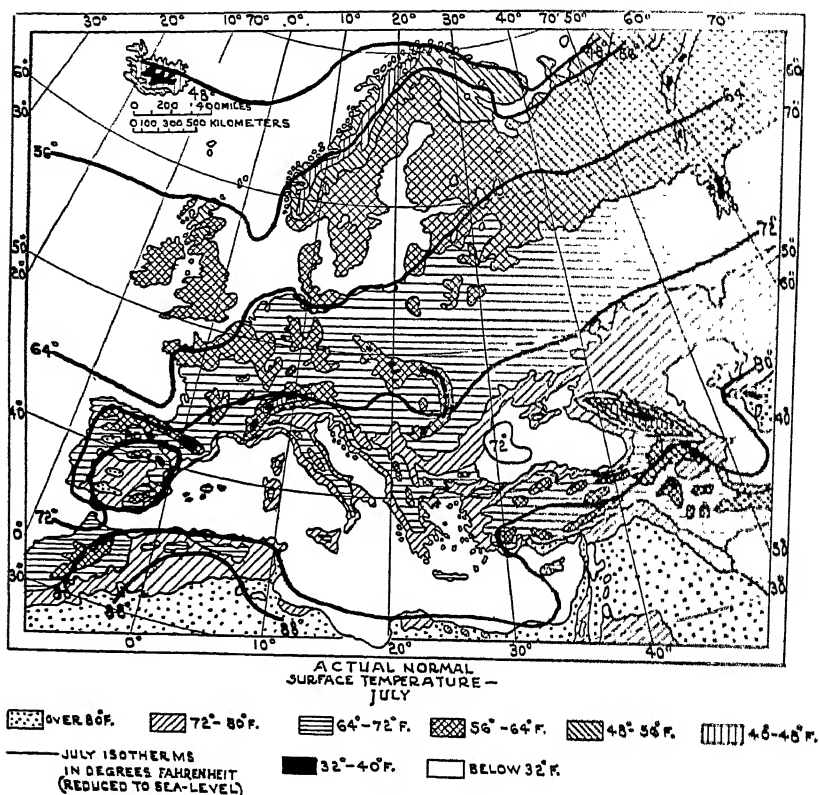


The winter rainfall of Europe. (After D. H. Smith, modified.)

The fact that no section of the continent outside of Russia lies more than 400 miles from the sea enables these bodies of water to modify the climate of all sections except the extreme east.

The situation of Europe to the west of the great continental land mass of Asia causes it to be influenced by the monsoon effect so noticeable over sections of the latter continent. During the winter the cooling of the land covers eastern Europe with a blanket of cold air which

prevents the penetration of the tempering, moisture-laden winds from the sea, and results in dry cold weather. During the summer, on the other hand, the heating of the land results in the formation of a low-pressure area in the east which encourages the penetration of the oceanic winds and the cyclonic storms. These favor human occupancy by bringing rainfall and modifying the temperature.

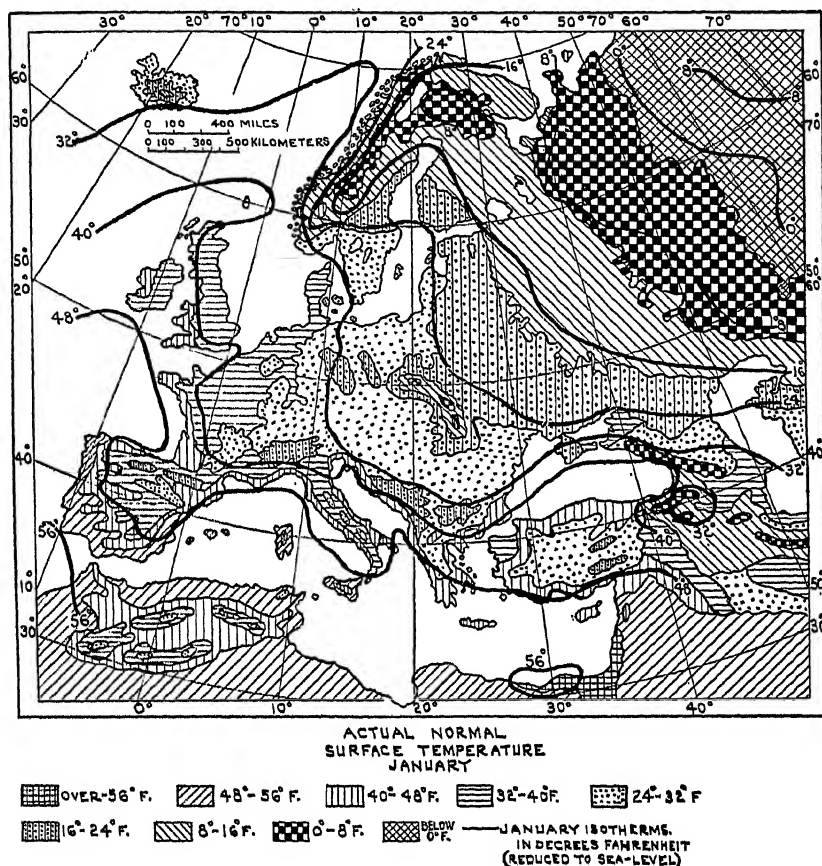


Actual normal surface temperatures in July.

**Relief.**—The principal relief features of Europe run in an east and west direction, that is, parallel to the prevailing winds rather than across them. This arrangement enables the winds to carry their moderating influence and moisture far into the interior without the interference of relief features. This is in sharp contrast to North America, where the Coast Ranges, Cascades, Sierras and Rockies run in a north and south direction, thus shutting out the oceanic influence from the interior. Certain highlands in Ireland, Great Britain, France and the Scandinavian Peninsula border the Atlantic, thus getting heavy rainfall and interfering somewhat with the influence of the winds. How-

ever, these elevations are not sufficiently high or extensive to interfere seriously with areas to the leeward.

**High- and Low-pressure Areas.**—To the northwest of Europe lies a permanent low-pressure area centering around Iceland. This expands during the winter, bringing in winds from the southwest and causing many storms over the western part of the continent. A perma-



Actual normal surface temperatures in January.

nent high-pressure area lies in the southwest around the Azores. This is small in the winter but expands in the summer, bringing in winds from the west and the northwest over southern Europe and giving that region mild, dry summers.

#### TEMPERATURE

As a result of the operation of these factors, the tempering effects of the ocean and other bodies of water are carried far inland as-

cially in summer. During that season the isotherms follow a normal east and west course except that they bend somewhat to the north as they get farther from the sea, due to the fact that at that period the land is warmer than the sea in the same latitude. The temperature variations are illustrated by the fact that in July only the northern edge of Russia has a mean temperature below 50° F., and only certain sections of the Mediterranean region have a mean temperature of 80° F. or above. The following table illustrates the variation in mean July temperature between localities in northern, central and southern Europe lying in approximately the same longitude. Thus between Trondheim and Palermo, which are separated by some 25° of latitude, there is a variation in mean July temperature of only 19.1° F.

TABLE 2  
MEAN JULY TEMPERATURES

Place	Mean July Temperature
Trondheim (Trondhjem).....	57.3° F.
Köbenhavn (Copenhagen).....	61.9°
Berlin.....	64.6°
Wien (Vienna).....	67.3°
Milano (Milan).....	74.8°
Palermo.....	76.3°

There is also a variation in summer temperature between eastern and western Europe, although, due to the fact that the winds from the Atlantic penetrate far into the interior during the summer, this variation is much less than during the winter season. For example, Valencia in extreme western Ireland has a mean July temperature of 50° F., while Orenburg in the same latitude in eastern Russia has a mean July temperature of 70.9° F. Thus during the summer season the isotherms follow roughly their normal east and west course although they curve slightly northward as they go toward the east. Also during this season the Atlantic winds prevent extremes in temperature and limit the temperature variation between northern and southern Europe.

During the winter the high-pressure area over the eastern and central portions of the continent prevents the tempering oceanic winds from penetrating any great distance, so that the greatest differences in temperature are between the east and west rather than the north and south. This difference between east and west is also aided by the warmth of the surface water off the western coast due to the existence of the North Atlantic Drift. As a consequence, the winter isotherms have a

tendency to run in a north and south direction. For example, the  $32^{\circ}$  F. isotherm for January runs just south of Iceland, then northeast to the Norwegian coast, south along this coast and through central Europe until it reaches the Danube Basin. From there it takes a northeast direction across the northern portion of the Black Sea and crosses just north of the Caucasus to the Caspian. In other words, Iceland has the same January temperature as the Danube Basin which lies over 1500 miles to the south of it. We also find the same isotherms connecting the Shetland Islands and the Aegean, regions separated by over  $20^{\circ}$  of latitude. During this season, however, temperature declines rapidly from west to east. Valencia and Orenburg, whose mean July temperatures differed by only  $11.0^{\circ}$  F., have a difference of  $41.2^{\circ}$  F. in their mean January temperatures. The following table illustrates this decline in temperature during the winter season:

TABLE 3  
MEAN JANUARY TEMPERATURES

Place	Mean January Temperature
Valencia (southwestern Ireland).....	$44.6^{\circ}$ F.
London.....	$38.7^{\circ}$
Berlin.....	$31.3^{\circ}$
Warszawa (Warsaw).....	$25.9^{\circ}$
Saratov.....	$11.5^{\circ}$
Orenburg.....	$3.4^{\circ}$

The above discussion demonstrates the fact that western Europe, under the influence of the westerly winds and the warm Atlantic, has a fairly stable temperature throughout the year, while central and eastern Europe, where these influences are less felt, are subject to much greater extremes. The following table illustrates how the range of temperature increases from west to east:

TABLE 4  
ANNUAL RANGE OF TEMPERATURE

Place	Mean January Temperature	Mean July Temperature	Mean Annual Range of Temperature
Valencia.....	$44.6^{\circ}$ F.	$59.0^{\circ}$	$14.4^{\circ}$
London.....	$38.7^{\circ}$	$62.8^{\circ}$	$24.1^{\circ}$
Berlin.....	$31.3^{\circ}$	$64.6^{\circ}$	$33.3^{\circ}$
Warszawa (Warsaw).....	$25.9^{\circ}$	$65.8^{\circ}$	$39.9^{\circ}$
Saratov.....	$11.5^{\circ}$	$72.1^{\circ}$	$60.6^{\circ}$
Orenburg.....	$3.4^{\circ}$	$70.9^{\circ}$	$67.5^{\circ}$

Where the North and Baltic Seas or the Mediterranean and the Black

Seas penetrate into the land area the increased range of temperature from west to east is not so great as in areas removed from the influence of such bodies of water.

W. G. Kendrew in his excellent work, *The Climates of the Continents*, points out that these variations cause Europe to be divided into four natural temperature regions: "These are (1) the northwest, with mild winters and cool summers, (2) the northeast, with cold winters and cool summers, (3) the southwest with mild winters and hot summers, and (4) the southeast, with cold winters and hot summers."

### PRECIPITATION

The same factors which caused the variations in temperature cause variations in the amount and distribution of rainfall. In general, the amount of annual rainfall decreases from west to east due to the fact that the winds from off the Atlantic lose their moisture as they penetrate farther into the interior. Local relief also influences the amount of rainfall. Highland areas which run in a north and south direction cause a considerable difference in rainfall on their two sides; thus Bergen on the western side of the Scandinavian highlands receives 73.1 inches annually, while Stockholm to the east of these highlands receives only 19.0 inches.

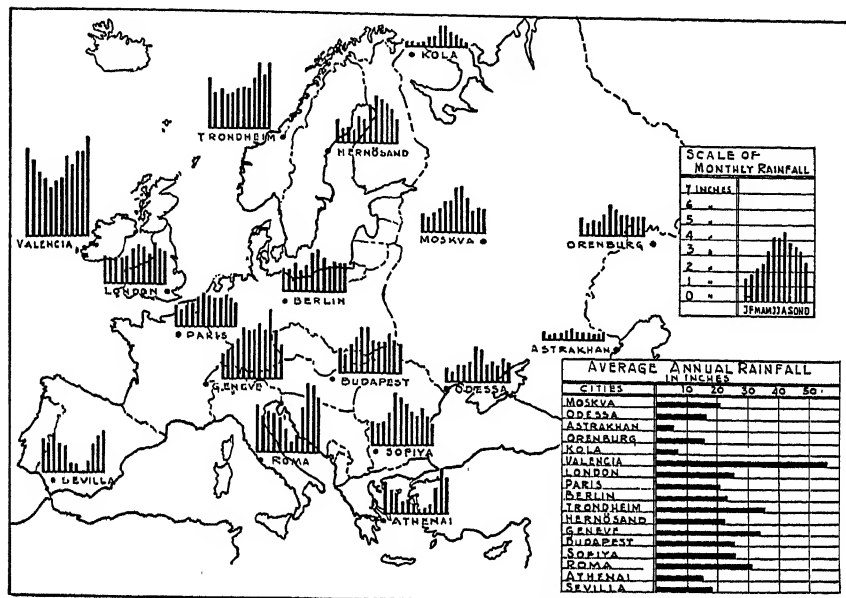
TABLE 5  
MEAN ANNUAL RAINFALL

Place	Mean Annual Rainfall (Inches)
Valencia.....	56.0
London.....	25.1
Berlin.....	22.9
Warszawa (Warsaw).....	22.3
Orenburg.....	15.2

Areas, such as the Hungarian plain, which are surrounded by highlands have less rainfall than those which are not so protected. The region lying just to the north of the Caspian Sea receives the least rainfall. This area has the disadvantage not only of lying far to the east but also of being low, much of it being actually below sea level. Astrakhan, with a rainfall of 5.9 inches per year, may be taken as typical of this section. In summary, it may be said that the rainfall of Europe diminishes from west to east, but that locally relief causes considerable variations.

The seasonal distribution of rainfall also varies in the different sections of the continent. The extreme northwest has a rainfall at all

seasons, with a maximum during the winter. Central Europe also has rain at all seasons, but has a summer maximum, while eastern Europe has its rainfall chiefly in the summer. Mediterranean Europe, except where relief interferes with normal conditions, has most of its rainfall



Monthly and yearly rainfall at representative European stations.

in the winter. The following table shows clearly the variations in seasonal distribution of rainfall in various sections of Europe:

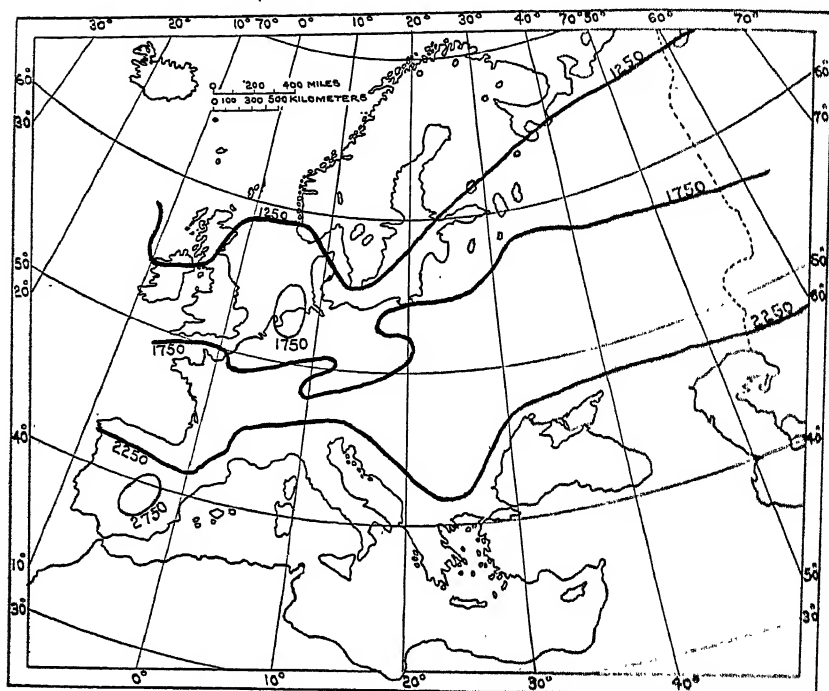
TABLE 6  
SEASONAL DISTRIBUTION OF RAINFALL  
(in percentage of annual total)

Place	Winter	Spring	Summer	Autumn
Valencia.....	31	20	22	27
London.....	22	21	29	28
München (Munich).....	14	24	41	21
Warszawa (Warsaw).....	16	22	39	23
Orenburg.....	20	22	24	24
Gibraltar.....	43	24	5	28
Palermo.....	39	23	6	32

The causes for these variations are to be found chiefly in the factors of climate previously discussed. The increase in the number of cyclonic storms and the fact that during the winter the sea is warmer than the land account for the winter maximum on the western edge of the continent. The low-pressure area which permits the cyclonic storms to penetrate far inland in the summer and the frequency of convec-



tional storms account for the summer maximum in central and eastern Europe. The shift of the wind belts, which causes the Mediterranean area to be influenced by the westerlies in the winter and by the horse



DISTRIBUTION (IN HOURS) OF BRIGHT SUNSHINE.

The distribution of bright sunlight, in hours. (After Lyde.)

latitudes and the trades in the summer, accounts for the winter maximum in that region.

#### GENERAL CLIMATE ZONES

Three general types of climate may be distinguished in Europe. In the northwest is to be found an oceanic climate with mild winters and cool summers, and with but small seasonal variations in temperature. Here also the rainfall is well distributed throughout the year, but with the most coming in the winter, autumn or late summer. Eastern Europe has a decided continental climate, with cold winters and hot summers and wide seasonal variations in temperature. Here there is some rainfall throughout the year, but most of it comes in the summer. The area around the Mediterranean Sea has what is known as a Mediterranean climate, with hot summers and mild winters, and with mod-

crate seasonal variations in temperature. Here most of the rainfall occurs during the winter season. Central Europe is essentially a transition zone between the oceanic climate of the west and the continental climate of the east, and it partakes of the characteristics of each. The influence of climate on human life in each of these zones is of interest, and is essential to an understanding of the geography of the continent.

#### THE INFLUENCES OF CLIMATE UPON EUROPEAN LIFE

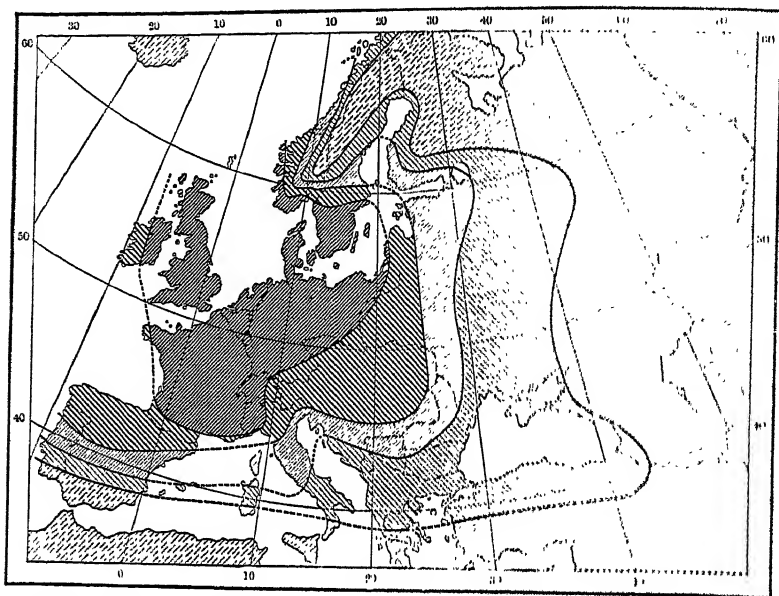
The cool summers, mild winters and the ample and well distributed rainfall of northwestern Europe furnish ideal conditions for the production of a wide variety of crops. This climate is also well suited for many of the most valuable domestic animals. The most widely produced breeds of horses, cattle and sheep were developed in this section. Here also conditions are ideal for human development. The moderate temperature, the high degree of humidity with frequent rain and much cloudy and foggy weather, and the variability produced by the frequent cyclonic storms, provide optimum conditions for the development of the white race. Climate has thus played an important part in the dominant position which northwestern Europe holds in European and world affairs.

Central Europe is not quite as well situated from a climatic point of view. The greater seasonal variations in temperature, the smaller amount of rainfall, the lower degree of relative humidity and the shorter growing season reduce the number of crops which can be grown profitably, and provide conditions which are slightly less well suited for the raising of certain types of domestic animals. From a human point of view, however, the climate is still stimulating and encourages health and energy.

Much of eastern Europe is only moderately well adapted for human progress. The great seasonal variations in temperature, the short growing season and the slight rainfall decidedly limit the number of crops which can be produced, and provide mediocre conditions for the raising of many breeds of domestic animals. The long, cold winters with the rural idleness which they necessitate, the lower degree of humidity, and the lessening variability due to the reduced influence of the cyclonic storms result in conditions which are not as conducive to human health and energy as are those to be found farther west.

The absence of rainfall during the growing season decidedly limits the natural vegetation and the number of agricultural crops which are to be found in the Mediterranean area. Forests are lacking except

where higher elevations result in increased rainfall. Except where irrigation is carried on, agriculture is limited to drought-resisting crops such as the olive, and the chief domestic animals are sheep and goats. The long, hot summers with the absence of variability and the



Climatic energy in Europe. (Reprinted by permission from *Economic and Social Geography*, by Huntington, Williams and Van Valkenburg, published by John Wiley & Sons, Inc.)

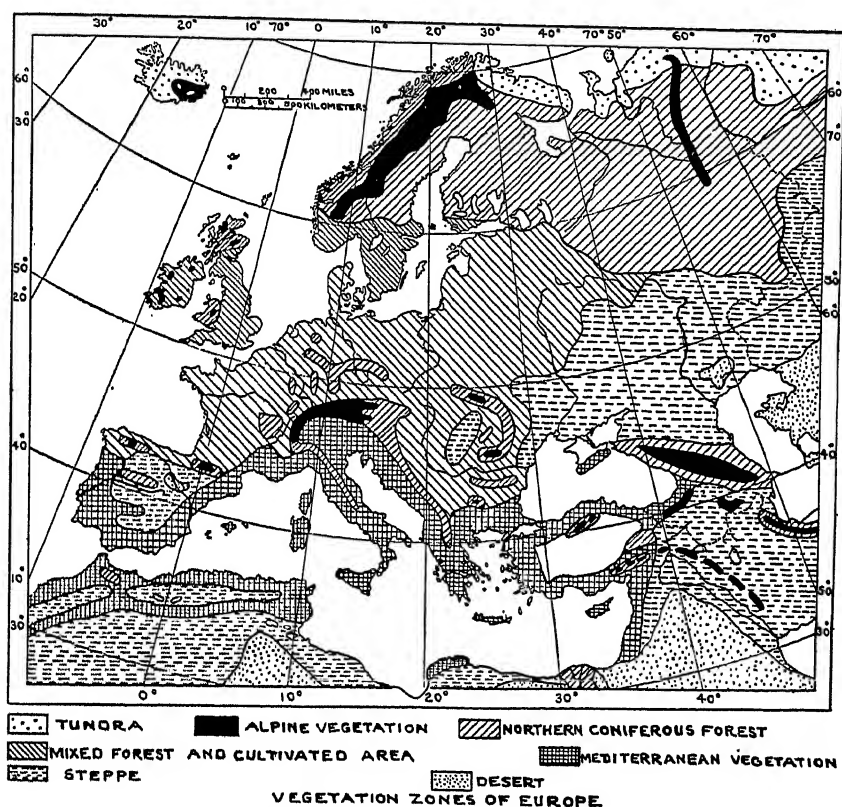
low degree of humidity result in a climate which is not especially stimulating to man.

### ZONES OF NATURAL VEGETATION

The extension of the ice sheet during the last glacial period is responsible for Europe having a smaller variety of plant life than have most other continents. The ice at that time worked its way south as far as the mouth of the Rhine in the west and the headwaters of the Oder and the Wista (Vistula) in the east. At the same time the greatly enlarged glaciers of the Alps forced their way northward. The narrow belt which separated these areas of ice was subjected to a cold steppe condition. As a result, many types of vegetation were destroyed, or nearly so, and the remaining types were slow in regaining the lands they had previously occupied. Thus the diversity of native plant life

in Europe is not great. This effect is especially noticeable in the forests, the number of species of conifers and broad-leaved trees being much smaller in Europe than in either North America or Asia.

It is probable that most of Europe was formerly occupied by a great forest area extending from the Alps to the North Sea and the Baltic, and from the border of the Atlantic to the steppes of Hungary



The vegetation zones of Europe.

and Russia, while in northern Russia this forest extended across the Urals and merged into the forests of Siberia. North of the forest region lay a narrow strip of the Arctic tundra, while south of the Alps the evergreen forests of the Mediterranean regions were interspersed with treeless areas. Again toward the southeast the forest gave way to the steppes of Hungary and southern Russia.

**The Arctic Tundra.**—A tundra type of vegetation is found in the extreme north of Russia and the Scandinavian Peninsula, and extends southward in the highlands of Scandinavia and in the Ural Mountains.

Here the winters are long and severe and the precipitation slight, usually less than ten inches. Here also the ground never thaws below a foot or two, so that trees and deep-rooted plants cannot grow. The only vegetation consists of mosses, lichens, small shrubs, grasses and flowers which grow and mature very rapidly due to the short growing season. The only contribution which this vegetation makes to mankind is to serve as food for the wandering herds of reindeer upon which the Lapps, who inhabit this region, depend.

**The Coniferous Forest Belt.**—South of the tundra lies the broad forest belt of Europe. This in turn can be divided into two zones: the coniferous forest zone of the north, and the deciduous forest zone of the south. The coniferous forest is made up, for the most part, of firs and pines, and extends south approximately as far as a line passing through Oslo and Leningrad. Here are to be found the great commercial forests of present-day Europe, which constitute one of the important resources of the continent. Most of the land in this zone is still uncleared, and that which is cleared is used largely for dairying or for the raising of oats, rye, barley and potatoes.

**The Deciduous Forest Belt.**—South of the coniferous zone lies the great deciduous forest region of the continent. This forest region has been mostly cleared except in Russia, where considerable portions of the land are still forested between the latitude of Leningrad and that of Kiev. Originally the oak and the beech were the dominant trees in this forest, but other trees such as the elm and the ash were found locally. These forests were composed of a relatively small number of species, which seem to have occurred in almost pure stands. Where the higher elevations resulted in decreased temperature and increased rainfall the conifers tended to dominate, and they were also found on the marshy and sandy areas near the Baltic and the North Sea. This belt is today the greatest agricultural region of Europe, the chief crops being wheat, rye, sugar beets and potatoes, while improved pasture occupies large areas. Climatically it is the portion of Europe most favorable to man and, as a consequence, we find here the most active section of the continent.

**Mediterranean Vegetation.**—South of the Alpine Fold in the region of summer drought are to be found the evergreen forests of the Mediterranean. Man has occupied this region for such a long time, and has so modified the native plant life, that it is difficult to determine just what portion of it was originally forested. True forest, which is found today only in the more isolated regions, differs from the more

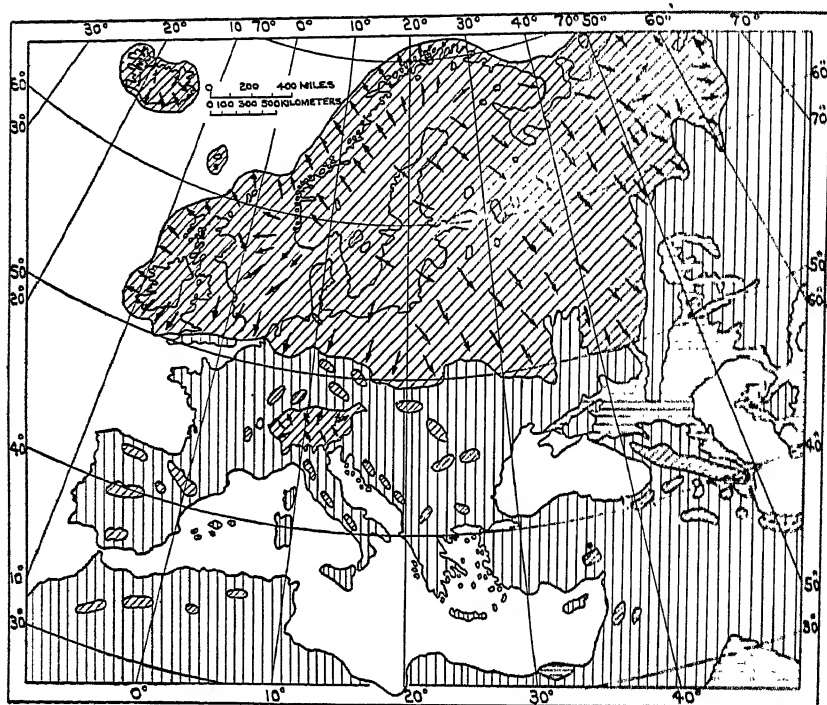
northern forests in that the trees stand quite far apart and there is little undergrowth. At present the native plant growth of much of the area consists of evergreen shrubs, although in the spring the ground is carpeted with various short-lived plants. Altitude causes a considerable variation in plant growth. In the higher elevations the forests are typical of central Europe, and, still higher, conifers predominate. In the lower elevations the plants are adapted to withstand summer drought. Many have deep and large root systems, and most are somber colored, with small thick leaves. Except where irrigation is possible or where elevation gives added rainfall, much of the economic life of the area depends upon the growth of such drought-resisting plants as the cork oak and the olive.

**Steppe Regions.**—In southeastern Europe the lack of rainfall and the heavy winds in winter limit tree growth, and result in great stretches of steppe or temperate grass lands. This condition is to be found in the Hungarian plain and in southern Russia. Rainfall is heavier in the western portion of the region, while eastward toward the Caspian Sea the steppe changes to a semi-desert, and in places to almost a true desert type of vegetation. The appearance of the steppe changes greatly with the season. In the winter most of the area is snow covered, while in the spring it is blanketed by a profusion of brilliant flowers. As the flowers disappear in early summer the steppe appears as a great green carpet stretching on all sides to the horizon; however, as summer gradually brings an end to the rains, this grass withers and the steppes take on an appearance of monotonous brown which characterizes them during the late summer and autumn months. The better-watered portions of this region are cultivated, and, in Hungary and the Ukraine, constitute some of the most important grain-producing areas of the continent. The dryer portions of the region are used for grazing and frequently give rise to a migratory type of existence.





Every zone, with the possible exception of the tundra, thus yields vegetation which is useful to man. The vegetation of each has exerted and does exert an influence over the lives of the peoples inhabiting it. This causes life to differ in the various regions, but as the products of each zone are wanted by the others, the resultant exchange tends toward the exchange of ideas and the spread of a common civilization and culture. These zones may thus be said to be responsible, in part at least, for differences in types of life in various portions of Europe, and at the same time to encourage the spread of a common European culture.

## NATIVE ANIMAL LIFE

The ice sheet of the Glacial Age greatly reduced the native animal life of Europe. It influenced fish and bird life little, if at all, but the other animals were either eliminated or decidedly affected by the con



THE GREAT ICE AGE

-  MAXIMUM EXTENT OF CONTINENTAL GLACIER
-  UNGLACIATED REGIONS
-  PROBABLE EXTENT OF PLEISTOCENE SEA
-  ARROWS INDICATE DIRECTION OF ICE FLOW

The extent of the European ice sheets during the last glacial epoch.

ditions existing during this period. Thus the native animal life of Europe consisted of comparatively few species, and many of these have been either eliminated or greatly reduced in numbers by man. On the other hand, man has introduced many domestic animals which have proved an invaluable aid in his struggle for existence. Also many animals of the steppe type, such as the rat, the rabbit, the grasshopper and the locust, migrated from the east with the clearing of the forest and the introduction of grain and similar products.

The elimination of the larger animals by the ice sheet and the reduction in the food supply of others unquestionably aided early man in his settlement of the continent. Those animals which would have been his most dangerous rivals disappeared, and yet sufficient numbers of others remained to furnish him with needed food and clothing. Due to the type of the continent itself, most of those that remained were of either a forest or a mountain type. In the deciduous forests of the west deer were plentiful, while farther to the north and the east, in the dense forests of conifers, the bear and the wolf were abundant. The chamois and the ibex of the Alps are typical of the mountain types which remained. Today these native animals are of importance only as a source of sport, or, in the more remote regions, as a source of valuable furs.

The Ice Age had slight influence on the bird life of Europe, and birds have always been very plentiful. This has probably been due to a number of causes. The vast expanse of forest and the variations in climate which encouraged migrations within the continent itself played a part, but one of the most important factors has been that the Nile Valley provided an excellent avenue of migration between the summer breeding grounds of Europe and the winter quarters in Africa. The wealth of bird life not only has made existence more pleasing for man, but has aided him materially in his conflict with insect pests.

Fish life has also been plentiful in the surrounding ocean and seas, and in the inland waterways of Europe. The most important fishing ground is to be found in the shallow, cool waters of the North Sea, centering around the famous Dogger Bank. Valuable fishing areas also lie off the Norwegian coast and near Iceland. Fish are sufficiently plentiful off the Atlantic coasts of France and Spain to give rise to a fishing industry, but the edible varieties are not as plentiful or as valuable as in the waters farther north. Fish are also found in the waters of the Arctic Ocean, but the unfavorable climate and isolation of much of the Arctic coast permit but a slight development of the fishing industry. Fish are present in the Mediterranean and the Baltic in numbers sufficient to give rise to a fishing industry, but are much less plentiful than in the North Sea. Most of the rivers and lakes of Europe contain fish in varying amounts. In a few cases fish are sufficiently plentiful or of such a valuable type as to give rise to a fishing industry, but for the most part the fish of such waters are of but slight economic importance. The Volga with its famous sturgeon is one of the most noteworthy exceptions. Europe is thus favored by having its inland and surrounding waters plentifully supplied with fish



life. These fish have served as an important food supply for the European peoples, and were in part responsible for the early interest in seamanship which aided the continent in commerce and colonial expansion. It is also frequently said that the fishing communities surrounding the North Sea were in part responsible for the development of democratic institutions in that region. This is based on the fact that fishing communities, because the character of the work necessitates co-operation, are normally democratic and might well have exercised an influence on the political and social thought of the inland communities with which they came into contact.

## BIBLIOGRAPHY

### THE CONTINENT AS A WHOLE

- "Balance of International Payments of the United States in 1932," *Trade Information Bulletin* 814, U. S. Department of Commerce, Washington, 1933.
- Barker, W. H., and Reas, W., *The Making of Europe*, A. & C. Black, London, 1920.
- Blanchard, W. O., and Visser, S. S., *Economic Geography of Europe*, McGraw-Hill Book Co., Inc., New York, 1931.
- Bowman, I., *The New World*, World Book Co., Yonkers, 1928, 4th edition.
- Brooks, L., *Europe, Including the British Isles*, University of London Press, London, 1926.
- de Balla, V., *The New Balance of Power in Europe*, Johns Hopkins Press, Baltimore, 1932.
- de Csikay, P., *L'Europe central, économique et sociale*, Librairie Félix Alcan, Paris, 1931.
- de Martonne, E., *Europe Centrale, Part II: Suisse, Autriche, Hongrie, Tchécoslovaquie, Pologne, Roumanie*, Géographie Universelle, Tome 4, Librairie Armand Colin, Paris, 1931.
- Dominian, L., *The Frontiers of Language and Nationality in Europe*, Henry Holt & Co., Inc., New York, 1917.
- Economic Briefs of Europe*, Ames, Emerick & Co., New York, 1927.
- Fairgrieve, J., *Geography and World Power*, University of London Press, London, 1924, 2nd edition.
- Fleure, H. J., *Human Geography of Western Europe*, Williams and Norgate, London, 1919.
- Freeman, E. A., *The Historical Geography of Europe*, Longmans, Green & Co., New York, 1903, 3rd edition.
- Herbertson, F. L. D., *Europe*, Oxford University Press, Oxford, 1909.
- Huntington, E., and Gregory, H. E., *The Geography of Europe*, Yale University Press, New Haven, 1918.
- Institute of International Finance, *Bulletins on the various European countries*, Investment Bankers Association of America in cooperation with New York University, New York.

- Irvine, H. D., *The Making of Rural Europe*, G. Allen & Unwin, Ltd., London, 1923.
- Jefferson, M., *Man in Europe*, Harcourt, Brace and Co., New York, 1924.
- Laborde, E. D., *A Geography of Western Europe*, University of London Press, London, 1928.
- Lyde, L. W., *The Continent of Europe*, Macmillan and Company, Ltd., London, 1930, 4th edition.
- *Peninsular Europe*, Longmans, Green & Co., Ltd., London, 1931.
- Macmunn, N. E., and Coster, G., *Europe—A Regional Geography*, Clarendon Press, Oxford, 1926.
- Partsch, J., *Central Europe*, D. Appleton-Century Co., Inc., New York, 1915.
- Smith, D. H., *An Economic Geography of Europe*, Longmans, Green & Co., New York, 1925.
- Smith, H. A., *The Economic Uses of International Rivers*, P. S. King & Sons, Ltd., London, 1932.
- Stanoyevich, M. S., *Slavonic Nations of Yesterday and Today*, The H. W. Wilson Co., New York, 1925.
- Woods, E. G., *The Baltic Region*, E. P. Dutton & Co., Inc., New York, 1932.

## CLIMATE

- Brooks, C. E. P., *Climate, A Handbook*, E. Benn, Ltd., London, 1929.
- Clayton, H. H. (ed.), *World Weather Records*, Smithsonian Misc. Collection, Smithsonian Institution, Washington, 1927.
- Kendrew, W. G., *The Climates of the Continents*, Oxford Press, New York, 1927, 2nd edition.

## ATLASES AND MAPS

- Goode, J. P., *School Atlas*, Rand McNally & Co., Chicago, 1932, 4th edition.
- Halász, A., *New Central Europe—Economic Maps*, R. Gergely, Budapest, 1928.
- Lobeck, A. K., *Physiographic Diagram of Europe*, The Geographic Press, Columbia University, New York.
- New Map of Europe*, National Geographical Society, Washington, 1929.
- Philip, G., and McConnell, W. R., *Appleton's Modern School Atlas*, D. Appleton-Century Co., Inc., New York, 1928.
- Sydow-Wagners, *Methodischer Schul-Atlas, Gotha*, Justus Perthes, Berlin, 1923.

## THE POPULATION OF EUROPE

THROUGHOUT human history a constant stream of peoples have made their way into Europe, until this tiny continent exceeds all others in density of population and in racial and cultural mixture. Within recent years the density has become so great in many areas that the flow of population has been reversed, and Europeans have gone out to settle new lands and to carry European culture and trade to the four corners of the world.

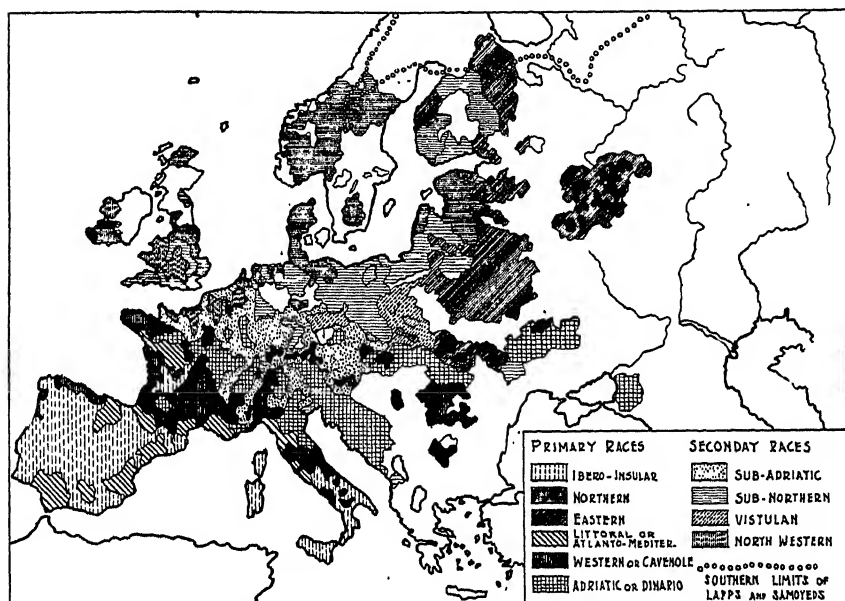
## THE RACES OF EUROPE

A study of the racial background of the European peoples is of but limited value to the geographer, as the ethnologists themselves disagree as to racial classifications, and there are no scientific data of value concerning the characteristics of the various racial groups. Another handicap is the fact that racial mixture has been going on for such a long time that throughout the continent examples of pure racial stocks are extremely rare. This diversity and mixture began long before the period of recorded history. Earliest man seems to have been long-headed, but even as early as the polished stone period there are evidences of a broad-headed people living side by side with the long-heads in western Europe. During the Bronze Age, if not before, a broad-headed people invaded the British Isles and mixed with the long-heads inhabiting that area. Thus for countless centuries the mixture has gone on, until today it is difficult to trace the racial background of the average European.

The majority of the people of the continent are members of the Aryan or Indo-European race. These in turn are divided into several sub-races. Authorities differ as to the exact number. Many geographers continue to use the classification of Ripley, in which he divides the people into three major groups, Teutonic, Alpine and Mediterranean. However, more recent research indicates that this classification may be too simple; and such authorities as Deniker divide the European Aryans into some six major and four minor divisions. Regardless of

the exact classification used, it can be said that in the north a blonde, long-headed type predominates; round-headed peoples occupy the center and east; and a dark, long-headed group is most numerous in the south.

In addition to the Aryans, members of the Ural-Altian race are present in considerable numbers. One division of this group, known as the Finno-Ugrians, includes such peoples as the Lapps, Finns, Esths, Magyars and Bulgars. Another division includes the Turks and Tartars. In many cases these peoples have mixed with the Aryans to such



The races of Europe. (After Deniker.)

an extent that most of their original physical and cultural characteristics have disappeared. Another non-Aryan group consists of the Semitic peoples, of which the Jews, Maltese, Armenians and Gypsies are the most numerous.

In the absence of accurate scientific data, it is impossible to ascribe definite characteristics to any of these racial groups. However, the belief that such characteristics exist is reflected in the works of many recent authors who attempt to prove the superiority of such groups as the Nordics. The psychological effect of such beliefs is important, and has helped to guide the actions of certain peoples.

Group habits, customs, and cultures are as important, if not more so, than racial characteristics. Thus group consciousness may extend

beyond national boundaries and include peoples of different races and nations. For example, we speak of a Slavic culture or a Germanic culture, referring to that intangible something which may have its background in common history or a common language, and which serves to create common interests or common customs among the peoples of the group. Or again, group self-consciousness may take the form of national self-consciousness, and be confined within the limits of a single nation. Thus in France are to be found representatives of almost every racial group in Europe; and yet these peoples have been so bound together by proximity, by a common language, and by historical events that they have been fused into a unified group which shows common reactions to certain environmental influences. This group self-consciousness is no less important than racial characteristics, and it will be dealt with in the discussion of religion and languages, and taken up in more detail as the individual states are considered.

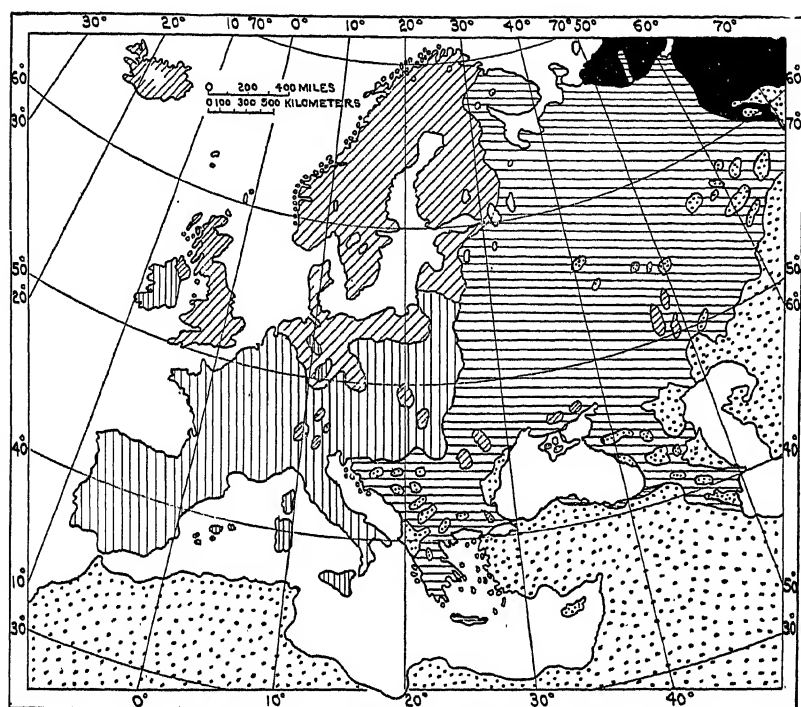
### THE RELIGIONS OF EUROPE

Religion is an almost universal force which influences many of man's activities. Consequently it has frequently played a part in his relations with his environment. While there is no agreement as to the exact part so played by the various religions of the world, yet sufficient is known to make a brief survey of the religions of Europe valuable from a geographical point of view.

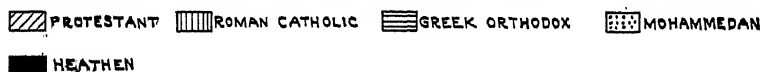
Christianity dominates Europe, and is almost the universal religion of that continent except in the Balkan Peninsula and southern Europe, where portions of the population are Mohammedan. However, the Mohammedan population is small and relatively unimportant in Europe, although it dominates in Asia Minor and northern Africa. The Christians of the continent are in turn divided into three major groups, Protestants, Roman Catholics and Greek Orthodox. The Protestant strength centers in the nations bordering the North and Baltic Seas, such as Great Britain, The Netherlands, northern and central Germany, Denmark, Norway, Sweden, Finland, Esthonia and Latvia. The Greek Orthodox religion dominates in Russia, Rumania and the Balkan States. The present anti-religious agitation in Russia has weakened the strength of this church in that area, but it is impossible, as yet, to tell whether this condition will be permanent. Most of the rest of Europe is Roman Catholic in faith. The chief Catholic countries are Spain, Portugal, France, Belgium, Ireland, Austria, Hungary, Czechoslovakia, Poland and Lithuania. The only other religious group consists of the

Jews, who are scattered quite widely throughout Europe, and are especially numerous in Russia, Poland and Germany.

The principal influence of the three branches of Christianity has been to unite people of the same faith and to separate them from other peoples. Unity of religion has meant a certain common sympathy which in the past has frequently been reflected in common political



BOUNDARIES OF RELIGIONS



The religions of Europe. (After Bowman.)

action. This force, however, seems less important today than formerly. Nevertheless, examples of its influence are still present. Following the World War, a plebiscite was held in the Allenstein district of East Prussia, to see whether it would go to Poland or remain in Prussia. The people of the district were Poles in race and speech but Lutheran in religion; the majority of Poles are Roman Catholic, and the Germans of East Prussia are Protestants. The district voted to remain in East Prussia, and religion is one of the factors which doubtless influenced the vote.

It is doubtful whether at present the three Christian groups are responsible for any differences in economic life in the areas where they dominate. The fatalistic doctrines believed in by many of the Mohammedans seem, however, to have retarded economic activity. If everything has been foreordained, then there is little incentive to improve one's lot or to struggle against adverse conditions. Thus a less active and aggressive economic life has resulted in the sections where this type of religion dominates.

### THE LANGUAGES OF EUROPE

Where a common language exists, the interchange of ideas is facilitated, political sympathy is aroused, and trade is encouraged. Thus in Europe the cultural, political and economic relationships between Germany and Austria have been made closer by the use of a common language. Similarly, the close relationships between the French and the Walloons of Belgium have been aided by the same cause. On the other hand, minority groups strive to preserve their original language, and this tends toward the political disunity of the countries within which they are located. This was one of the disrupting factors in the old Austro-Hungarian Empire, and today it is making itself felt in such countries as Yugoslavia and Czechoslovakia.

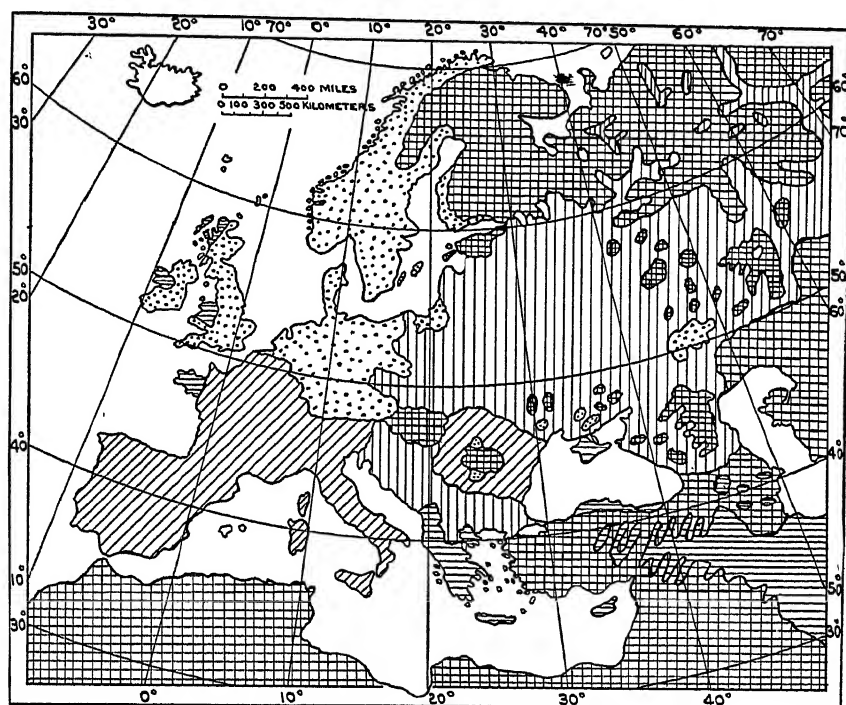
There are three major groups of languages in present-day Europe. First, the Germanic languages, which dominate the United Kingdom, Ireland, The Netherlands, Germany, Austria, Switzerland, Denmark, Norway and Sweden, and which are used by sections of the population of Belgium and Czechoslovakia. German and English are the two most important languages within this group, and are rapidly becoming the languages of trade and commerce throughout the world. The second group consists of the Romance languages, which include French, Spanish, Italian, Portuguese and Rumanian. French, Italian and Spanish are the principal languages of this group, and French is widely used, having long been regarded as the language of diplomacy. The third group comprises the Slavic languages, which are used by the major portions of the population of Russia, Poland, Czechoslovakia, Yugoslavia and Bulgaria. Other languages which do not belong to any of these three major groups appear locally.

The complexity of languages used in Europe has been somewhat of a handicap to the exchange of ideas and the development of sympathy between different peoples, but it has also led to a knowledge of lan-

guages on the part of the average European which is astounding to an American.

### THE GROWTH OF POPULATION IN EUROPE

One of the most remarkable features of the nineteenth century was the extremely rapid increase in the population of the world. In 1800



The principal language groups of Europe. (After Bowman.)

there were only some 850,000,000 people in the world, while the present population is estimated at something over 1,960,000,000. In other words, in the past 130 years the population of the world has increased over 140 per cent. It is interesting to note, also, that the major part of this increase has taken place in Europe and in the areas controlled by Europeans or their descendants.

No accurate statistics are available prior to the beginning of the nineteenth century, but sufficient information is at hand to give some indication as to what was taking place in Europe during and since the



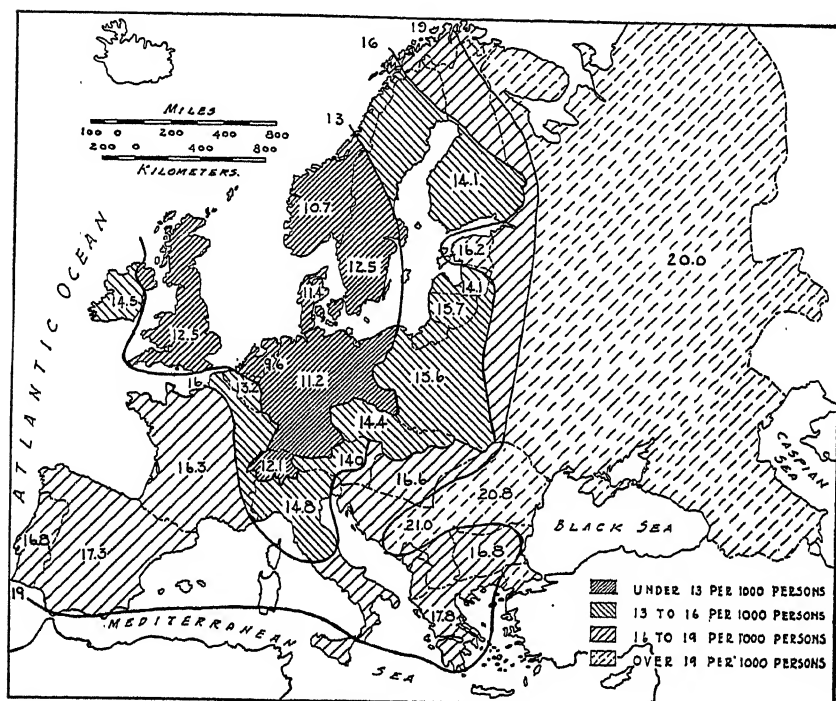
Middle Ages. The growth of population during the Middle Ages was very slow. For example, in the period of Charlemagne the territories included in pre-war France are estimated to have had a population of 8,000,000, while five centuries later the number of people in the same territory had reached scarcely 12,000,000. Between 1300 and 1500 it is estimated that there was no change in the population of the territories now included in Germany. Similar conditions existed in the other European areas. The causes for this slow growth were the scantiness of the food supply due to the backwardness of agriculture, the numerous wars of the period, the frequency of disease and pestilence, and the lack of sanitation and medical care.

Population began to increase more rapidly during the sixteenth century, especially in France and England. The increase continued during the seventeenth century, and became more rapid and universal in the eighteenth century. The first real estimate of the population of Europe was made by J. P. Sussmilch about the middle of the eighteenth century. He estimated that at that time the continent contained 130,000,000 people. By 1800 the population had increased to 157,000,000; by 1882 to 327,000,000; by 1900 to 402,000,000; by 1914 to 425,000,000; and by 1930 to 496,000,000. In other words, in the 180-year period from 1750 to 1930 the population of the continent increased nearly 286 per cent. It is important to note that this rapid rate of increase has continued throughout the present century, the population in 1930 being approximately 22 per cent greater than in 1900.

The increase in population which has taken place during the nineteenth and twentieth centuries has not been uniform in all portions of the continent. The population of England, Germany, Russia, Denmark, The Netherlands, Spain, Italy, Belgium, Austria, Norway and Sweden increased with moderate speed. France and Scotland increased slowly in numbers, while Ireland actually declined in population. These different rates of increase are due to a variety of social, political and economic causes, which will be considered at greater length in the discussion of the individual countries.

In most cases the immediate cause of the increase in population during the last century has been a decline in the death rate, for in the majority of European countries the birth rate has fallen steadily since 1870. However, due to the decline in the number of wars, and improvements in medical science and sanitation, the decline of the death rate has more than kept pace with that of the birth rate. The factors which made this increase possible are partially geographical in character. The first factor is the increasing productiveness of European

countries. Agricultural production was greatly increased through the development of modern scientific farming. Raw materials were exploited and used as a basis for important manufacturing industries, and improved transportation facilities aided trade. These improvements were made possible by inventions, by the advance of science, and by an increase in the standards of living of the population.



European health conditions as represented by death rates in 1931.

The second factor which aided in the same direction was the development of the outlying world. Great agricultural areas were opened up, and their surplus went to feed the European peoples. The raw materials of all sections of the world were exploited and sent to the European factories, and new markets were developed which would absorb the surplus of European industry.

At present Europe ranks second among the continents in total population, being surpassed only by Asia. However, in density of population per square mile it ranks first, having approximately 130 people per square mile, as compared with 54 for Asia and 17 for North America. This tremendous concentration of population in a small area illustrates the productivity of Europe and the ability of the Europeans. It also

gives rise to numerous serious problems, such as the difficulty of providing food and employment for such large numbers, the desire for colonies to which surplus populations may go, and all the various problems connected with emigration. These problems have been the cause of numerous national and international difficulties, and may become even more serious in the future if the present increase in population continues.

TABLE 7  
THE POPULATION OF THE CONTINENTS—1930<sup>1</sup>

Continent	Population
Asia.....	1,102,000,000
Europe.....	496,000,000
North America.....	168,000,000
Africa.....	131,000,000
South America.....	63,000,000
Oceania.....	8,090,000
World.....	1,968,000,000

**The Growth of European Cities.**—The growth of cities or urban centers has accompanied the increase of European population, and has been especially rapid during the nineteenth and twentieth centuries. Prior to this period European peoples were largely rural. During the period of Mediterranean dominance cities had indeed assumed considerable importance, but with the fall of the Roman Empire, Europe entered into a stage of rural development which lasted throughout the Middle Ages. The increase of industry and trade in the French and Italian cities started the trend toward urban life which, while at first slow and irregular, has continued with increasing speed down to the present time. During the eighteenth century the drift toward the cities became more noticeable, and during the nineteenth century it became extremely rapid. London may be used as an illustration of this movement. In 1700 this city had a population of 684,350; by 1801 it had increased to 900,000, and today greater London has a population of over 7,800,000. The increase of urban population in proportion to the total population is well illustrated by England and Wales. In 1801 the proportion of people living in towns and cities of over 10,000 in these two areas was 17 per cent, while by 1930 it had risen to approximately 80 per cent. This same movement went on in other countries, but to a less degree.

This concentration of population in cities may be largely attributed

<sup>1</sup> These statistics are based on the latest available census figures, and on estimates where no census figures are available. In 1930 the United States Department of Commerce estimated the population of the world at 2,012,800,000.

to the growth of modern industrialism, the demands for goods produced in the city, improvements in transportation, the fact that the cities have provided greater opportunities for advancement than the rural districts, and the companionship and cultural advantages which they supply. The extent of the future trend toward the cities must, therefore, depend largely upon whether these factors continue to function in the same manner as they have in the past.

**Present European Cities.**—Europe contains more large cities and has a larger city population than has any other continent, although the proportion of the population living in cities is less than in Australia. According to the latest available estimates, there are throughout the world 245 cities with a population of over 200,000. Of these, 117, or approximately 48 per cent, are in Europe.

TABLE 8

CITIES OF THE WORLD WITH POPULATION OF 200,000 OR OVER,  
NUMBER BY CONTINENTS, LATEST AVAILABLE ESTIMATES

Continent	Number
Europe.....	117
Asia.....	55
North America.....	47
South America.....	14
Africa.....	6
Oceania.....	6
World.....	245

The concentration of population in urban centers is most pronounced in the industrial nations of northwestern Europe. In such highly industrialized states as Great Britain, Germany, Belgium and The Netherlands, cities are abundant and contain the majority of the population. To the south and the east, agriculture occupies a position of greater relative importance; cities therefore become much less numerous. The number and importance of cities is thus intimately related to the predominant activity of the population.

**Types of European Cities.**—There are three types of cities to be found in Europe which are of special interest from a geographical point of view. First there are the historical cities, such as Paris and London. These are usually located in the portion of the country which, at least in the past, has been most productive, and their exact location results from the concentration of trade routes at some particular point. Such cities have a well defined center and a unity which is peculiar to them. They normally are separated from other large centers of population. There is today no large city within sixty miles of Paris or in close proximity to London and Berlin. Such cities are the cultural and

TABLE 9

PERCENTAGE OF THE POPULATION OF REPRESENTATIVE EUROPEAN COUNTRIES LIVING IN CITIES OF 100,000 OR OVER, 1920

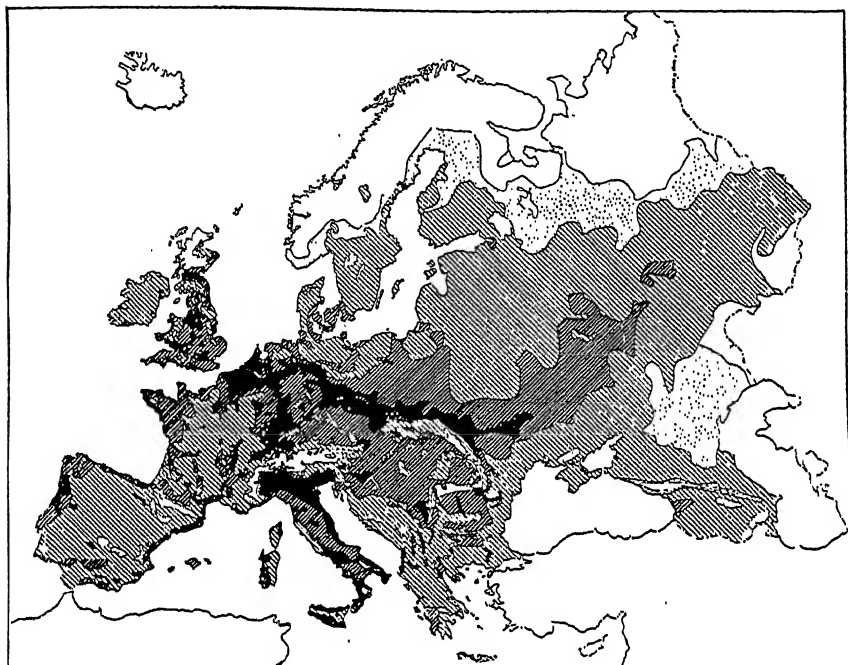
Countries	Number of Cities	Percentage
England and Wales.....	51	39.2
Scotland.....	4	36.5
Northern Ireland.....	1	33.0
Austria.....	3	32.4
Germany.....	45	26.6
The Netherlands.....	6	24.2
Denmark.....	1	20.1
Belgium.....	4	18.6
France.....	18	15.5
Greece.....	3	15.4
Switzerland.....	4	15.0
Hungary.....	3	14.4
Italy.....	18	14.2
Irish Free State.....	1	14.1
Sweden.....	3	12.4
Spain.....	10	12.0
Portugal.....	2	11.4
Estonia.....	1	11.2
Norway.....	1	9.7
Czechoslovakia.....	4	8.2
Poland.....	7	7.7
Russia.....	30	7.0
Finland.....	1	5.5
Bulgaria.....	1	3.9
Rumania.....	6	2.8
Yugoslavia.....	3	2.7

governmental centers of the nations within which they are to be found. They normally become the centers of important transportation routes, and consequently hold a prominent place in commerce. Manufacturing of the type characteristic of all large cities is also found, but it is seldom that such historic cities are associated with important manufacturing regions.

The second type is the true industrial city which, in Europe, is most often located on or near coal fields. Birmingham, Essen and Lille may be taken as examples of this type. Such cities usually have no definite center, and lack the unity of the historic city. They belong to regions of industrial activity, and frequently merge with neighboring centers of population so that it is difficult to determine definite boundaries. As compared with the historic centers, these cities are usually new, having developed, for the most part, during the past century.

The third type of city is primarily commercial, and usually grows up around some valuable harbor. Liverpool, Hamburg, Rotterdam and

Marseille are cities of this type. In such centers the port forms the point from which the city grows, and thus a certain amount of unity results. They may be isolated or closely associated with neighboring cities, depending upon the economic development of the surrounding areas. Manufacturing frequently develops, based on imported raw materials and on the demands of shipping. However, their primary interest



The distribution of population density in Europe from 500 or more to the square mile, indicated by the solid black, to less than 5 to the square mile, indicated by the white. (From "Agricultural Regions of Europe," by Olof Jonasson, appearing in *Economic Geography*, vol. 1, p. 289.)

is commercial, and they are only incidentally interested in manufacturing.

The importance of the harbors and the presence of coal in north-western Europe account for the concentration of the second and third types of cities in that area. The first type, however, depends primarily upon historical factors, and is much more widely distributed throughout the continent.

#### PRESENT DISTRIBUTION OF POPULATION

The density of population varies in different portions of Europe in accordance with variations in climate, soil, relief, mineral wealth

and availability of transportation facilities. The greatest density occurs in a belt linking Wales and the Ukraine, including central England, Northern France, Belgium, The Netherlands, northern and central Germany, the Czech Basin, southern Poland and portions of the Black Earth region of Russia. Branching from this region, an area of dense population extends from The Netherlands up the Rhine Valley to Switzerland, and is continued to the south of the Alps in the Po Basin and the plains of Firenze (Florence) and Napoli (Naples). All of these regions have over 250 people per square mile, and in a few instances the density exceeds 500. This great density is accounted for in part by the fertility of the soils and the consequent importance of agriculture; but especially toward the west the presence of iron and coal and

TABLE 10  
ESTIMATED DENSITY OF POPULATION PER SQUARE  
MILE, 1930

Countries	Population per Square Mile
England.....	742
Belgium.....	692
The Netherlands.....	599
United Kingdom.....	490
Germany.....	354
Italy.....	344
Wales.....	323
Luxembourg.....	301
Czechoslovakia.....	272
Switzerland.....	255
Hungary.....	242
Northern Ireland.....	240
Denmark.....	214
Poland.....	207
Austria.....	207
France.....	195
Portugal.....	179
Rumania.....	161
Scotland.....	159
Bulgaria.....	149
Yugoslavia.....	144
Greece.....	127
Spain.....	116
Irish Free State.....	112
Lithuania.....	110
Latvia.....	75
Estonia.....	61
European Russia <sup>a</sup> .....	56
Sweden.....	39
Finland.....	27
Norway.....	24

<sup>a</sup> Authorities differ widely as to the area and population of European Russia. The author has accepted the statistics used by the League of Nations. According to these estimates, the population of European Russia in 1931 amounted to 128,800,000, and the area to some 2,316,000 square miles.

proximity to the sea have favored the rise of great industrial cities, with their teeming millions.

On either side of these regions of maximum density the population gradually declines, partially in response to less favorable physical conditions. This continues until population almost disappears in the tundra belt, in the higher portions of the Alps, Pyrenees, Caucasus, the Scotch Highlands and the Scandinavian Mountains, and in the deserts bordering the head of the Caspian Sea. However, even in the densely populated regions there are sandy and marshy areas which support few people. Regions of this kind include the Campine of northern Belgium and the Pontine and Maremma marshes of the Italian Peninsula. In spite of these areas of slight population, Europe contains enough people to make it the most densely populated of all continents.

### BIBLIOGRAPHY

- A Manual on the Turanians and Pan-Turanianism*, Naval Staff Intelligence Department, London, 1918.
- Beddoe, J., *The Anthropological History of Europe*, Paisley, Alexander Gardner, London, 1912.
- Deniker, J., *The Races of Man*, Charles Scribner's Sons, New York, 1901.
- Grosvenor, E. A., "The Races of Europe," *National Geographic Magazine*, 1918, vol. 34, pp. 441-534.
- Hertz, F., *Race and Civilization*, The Macmillan Company, New York, 1928.
- Jefferson, M., "Culture of the Nations," *Bulletin of the American Geographical Society*, 1911, vol. 43, pp. 241-265.
- "Geographic Distribution of Inventiveness," *Geographical Review*, 1929, vol. 19, pp. 649-661.
- Kuczynski, R. R., *The Balance of Births and Deaths*: vol. 1, *Western and Northern Europe*, 1928; vol. 2, *Eastern and Southern Europe*, 1931, The Macmillan Company, New York, 1928 and 1931.
- League of Nations, Economic and Financial Section, *Natural Movement of Population During the First Quarter of the Twentieth Century*, Geneva, 1927.
- *Population and Natural Resources*, Geneva, 1927.
- *Estimate of Working Population of Certain Countries in 1931 and 1941*, Geneva, 1926.
- Health Organization, *International Health Yearbook*, Geneva, 1924 and 1925.
- International Labor Office, *Migration, 1920-1923, 1920-1924 and 1925*, Geneva.
- Pittard, E., *Race and History*, Alfred A. Knopf, New York, 1926.
- Ripley, W. Z., *The Races of Europe*, D. Appleton-Century Co., Inc., New York, 1900.
- Usher, A. P., "The History of Population and Settlement in Eurasia," *The Geographical Review*, 1930, vol. 20, pp. 110-132.



## CULTURAL AND POLITICAL ACTIVITY

SINCE the days of Pericles the Europeans have excelled in every phase of human activity. What people have equaled the Greeks in cultural attainments or approached the genius of the Roman for law and government? What conqueror of the past or present has even visioned an empire as mighty or as far-flung as that of Britain? What other continent has planted the seeds of its culture and its ideas in every clime and in every land until no group throughout the world has been untouched by its influence? Truly the Europeans hold an enviable position among the peoples of the earth, a position which is the result of a combination of physical and human factors unexcelled elsewhere.

The cultural achievements of a people are always difficult to measure, yet it is almost universally recognized that since the days of Athenian greatness Europeans have exceeded all others in such accomplishments. They have been leaders in such activities as art, literature, music, philosophy, science and education. Non-Europeans have made contributions in all of these fields, but in the great majority of cases they have been inferior in both quantity and quality to those made by the inhabitants of this most active of continents.

## CULTURAL ACTIVITY

**Art.**—European contributions in painting, sculpture and architecture have surpassed those of any other continent. The Parthenon, the Coliseum, Saint Peter's, the many Gothic cathedrals and the hundreds of beautiful palaces are but a few of the architectural gems of European origin. The Taj Mahal may equal any European building in beauty, but it is an isolated example of Indian architecture at its best, while Europe has thousands of beautiful buildings.

Today, as for the past hundreds of years, Europe is the artistic center of the world. European schools of art draw the most capable students from every continent. European galleries contain collections unequaled elsewhere. Such names as Michelangelo, Rembrandt, Van Dyke and Whistler represent the ultimate in artistic ability, and indi-

cate but a few of the great European artists. In general, the center of European artistic activity has followed the center of European civilization. First developing in Krētē (Crete) and the Grecian cities, it passed to the western Mediterranean with the rise of Roma. After the fall of the Empire it gradually shifted northward, until today it rests in northwestern Europe. It is doubtful, however, whether in many phases of artistic activity northwestern Europe has ever reached the heights achieved by Greece and Rome during their most active periods.

**Literature.**—Europe holds, and has held for a long period, a dominant position in literature, whether this takes the form of the novel, the essay, the drama, the short story or poetry. Such names as Sophocles, Shakespeare, Goethe, Dante and Tolstoy stand for the highest in literary achievement, and represent but a few of the literary geniuses which Europe has produced. They also indicate that this type of accomplishment has not been confined to any one portion of the continent, but has been found among nearly all European peoples. The invention of the printing press and the development of education made the works of literary leaders available to the great mass of the population, and helped to raise the general cultural standards.

**Music.**—In music Europe holds a commanding position. It has contributed far more than its share of great composers, musicians, and singers. Most of the famous operas have been written by Europeans, and the most notable operatic stars have come from that continent. Each portion of Europe has developed its own distinctive type of music, and has, consequently, contributed its share to the musical accomplishments of the whole continent. Here, as in other branches of cultural activity, other continents have made important contributions and have produced great composers and musicians, but they cannot equal either in number or in fame those of European origin.

**Philosophy.**—The leading philosophers for the past several hundred years have been Europeans, and their philosophy has exerted a profound influence over the thought of the entire world. Although this field of learning owes much to Asia and northern Africa, the major part of modern philosophy must be credited to Europe. Plato, Marcus Aurelius, Locke, Rousseau, Hume, Kant and many others have made important contributions. In this branch of human understanding, as in many others, the Mediterranean district in the past, and northwestern Europe at present, seem to have contributed more than other portions of the continent.

**Education.**—In education also Europeans have made contributions far out of proportion to their numbers. For a long period Euro-

pean universities were the chief centers of learning in the entire world. Even today their fame is world wide, and they draw scholars from every portion of the globe. In various phases of modern child education Europeans have made contributions which can be rivaled only by those of the Americans. The position of Europe in education is shown by the fact that in most portions of the modern world progressive peoples have adopted European educational methods, though at times modifying them to meet local conditions. Education, as measured by the literacy of the population, is most advanced in northwestern Europe. Here all the countries have less than 10 per cent illiteracy, and many of them have almost none. Moving out from this northwestern center, illiteracy increases toward the east and south until it reaches its maximum in Portugal, Greece and Russia. Thus another element of cultural advance is most developed in the northwestern portion of the continent.

**Science.**—In such fields of science as physics, chemistry, biology and geology, Europe has contributed greatly to human progress. The same applies to economics, sociology, political science, and the other social sciences. Europe has also taken the findings of its scientists in these various fields and has applied them to the problems faced by its peoples. Thus science advanced in its various applied fields, such as agriculture, manufacturing, transportation, human health, education and government. This progress has been aided by the inventiveness of Europeans, who for over a thousand years have contributed more than the people of any other continent in this respect. Because of their activities in science and their inventiveness, it is not surprising that Europeans were the first people to develop scientific agriculture, modern manufacturing, industrial chemistry, modern medicine and surgery, and industrial and educational psychology. European science has thus been responsible in no small part for prolonging human life and increasing human productivity, and for thousands of contributions which aid in making life more pleasant and more worth while, as well as some that have made war more horrible.

**Reasons for Cultural Activity.**—Human and physical factors have combined to produce European leadership in these and many other phases of cultural life. Without a capable and intelligent population, such achievements are impossible. It is not enough for a people merely to develop leaders or geniuses in these activities. The general mass of the population must be sufficiently advanced to encourage such leaders and to perpetuate and carry on their work. Fortunately most sections of Europe have shown the ability to produce leaders, and have a popu-

lation capable of understanding and continuing their activities. Thus the human element in Europe in part explains its cultural progress.

However, physical factors also are in part responsible for these achievements. A climate favorable to human health and to mental activity is essential to continued cultural progress. There should also be a favorable environment which makes possible the creation of a surplus wealth, thus relieving a portion of the population from the constant struggle to make a living, and producing that leisure without which cultural progress is impossible. Europe is again fortunate in having the desired type of climate, and in having in most sections the other environmental factors which encourage mental activity. Therefore, environment can be said to have played its part in the cultural progress of the continent.

### THE POLITICAL ACTIVITY OF EUROPE

The political activity of Europe has been as important and extensive as its cultural activities. Many of its nations have expanded until they have become leading world powers, and some have built up great colonial empires. Its peoples have originated and spread political forms and philosophies which have influenced the entire world. No continent has equaled it in either of these respects.

### THE EXPANSION OF EUROPEAN POWERS

With the passing of the Middle Ages began national unification and the formation of the true nation state. Then followed a period of expansion on the part of England, France, Russia, Germany, and other states with sufficient agricultural lands and industrial resources to support large and active populations. Such expansion continued until physical barriers were reached, or until further advance was blocked by a more powerful people. It is interesting to note that in most cases it was the peoples of the plains who expanded at the expense of their highland neighbors. However, in some highland areas the natural defenses were too strong, or the incentive for conquest was lacking. Consequently such small states as Andorra, Liechtenstein and Switzerland have maintained their independence. Where small states such as Belgium or The Netherlands remained in plain areas, it was usually because of the existence of some natural protective feature or because the site they occupied was of such strategic importance that the larger nations preferred to leave it in the hands of a small and relatively weak power.

**The United Kingdom.**—British expansion started in the plains of southern England. These were the largest and most productive lowlands of the island, and supported a dense and relatively prosperous population. Having themselves achieved political unity, the people of the plains moved out and conquered the bordering highlands of Wales and Scotland. They then brought under their control Ireland and other neighboring islands. Not content with the extent of their conquests, the English attempted to expand territorially on the continent, but, although they were temporarily successful, separation by water and strong opposition rendered such attempts impracticable.

An interest in and knowledge of the sea, fostered by their insular location and the presence of offshore fisheries, provided the people of the islands with an excellent basis for colonial expansion. It was not, however, until the need for trade and the pressure of a rapidly expanding population furnished motives for securing new territories that such expansion became important. Once the establishment of colonies had begun, new territories were added with great rapidity, until the British brought under their control the mightiest empire that the world has ever known. Today the British Empire, or the British Commonwealth of Nations as it is now called, covers approximately 26 per cent of the land area of the globe, and includes some 26 per cent of the world's population. Territories on every continent supply the home country with important raw materials and provide valuable markets for the products of British industry, while strategic islands and harbors on every sea aid British shipping. Truly the formation and maintenance of such a mighty empire have been a gigantic task for the people of these tiny islands.

**France.**—The fertile soils and central location of the Paris Basin made it the logical center from which French expansion took place. From this center the French moved in all directions, until human or physical barriers obstructed their advance. To the southwest they reached the Pyrenees, one of the most effective mountain barriers in Europe. The Mediterranean to the south and the Atlantic and the English Channel to the north and west obstructed further progress. The Alps and the Juras prevented penetration into Italy and Switzerland. The Ardennes and the Vosges hampered expansion toward the east, although at times the French have overcome these obstacles and reached the Rhine. Only in the northeast are physical boundaries totally lacking, and the French have advanced in this direction until checked by those controlling the fate of Belgium.

France has also built up a colonial empire second in size to that

of Great Britain. The desire to add to national prestige and to increase the man power of the country seems to have been the motive for such expansion, as the need for population outlets and markets or sources of raw material was less acute than in the case of many other European nations. Being the strongest power on the Mediterranean, it was natural that France should expand in northern Africa, and it is there that the largest colonies are now located. Smaller areas have been added on other continents, until French colonies and dependencies now have an area of some 3,958,626 square miles and a population of 59,860,000.

**Russia.**—Russia has expanded until today it comprises the largest continuous empire in the world. Its area is almost as large as North America, for it covers approximately one-sixth of the land surface of the earth. The center from which consolidation took place was the Valdai Hills in western Russia. The various rivers which radiate from this center facilitated the spread of Russian political power and Russian culture. Toward the east this expansion met little opposition, as the lands were thinly populated by weaker peoples. Toward the north expansion continued to the Arctic tundra and in some cases to the shores of the Arctic Ocean and the White Sea. Expansion toward the south was at least temporarily checked by natural barriers such as the Caucasus, the Black Sea and the Carpathians. On the west, however, the boundary has been fixed by historical factors, and has expanded and contracted with changes in the relative strength of Russia and her western neighbors. Today the country is largely cut off from the Baltic by three new states which are artificial creations set up for the purpose of isolating Russia.

The expansion of Russia has not been dictated by the search for markets or raw materials, but by the desire for a warm water port which could not be closed by enemies in case of war, and also by the pressure of an increasing plains population. This desire has led to numerous wars and to repeated efforts to secure control of Istanbul.

**Germany.**—German expansion began in the northern plain where Prussia gradually secured control of the neighboring states. It was not, however, until the formation of the Empire in 1871 that the southern highlands joined with Prussia to form the modern state. For the most part, German expansion has been limited by human rather than physical barriers. Only on the north, where the Baltic and the North Seas serve as effective water barriers, and on the south and the southeast, where the Alps and the mountains surrounding the Czech Basin constitute physical barriers, can Germany's boundaries be said to be natural. Even in the north the border between Denmark and Germany is

ethnic and historical rather than physical, while in the south the Danube Valley provides an opening between the Böhmer Wald and the Alps within which natural barriers are lacking. Toward the west the highlands bordering the Rhine serve in part as natural frontiers, but the actual boundary follows them only in sections, and they are pierced by two important passageways, the Belfort Gate and the Lorraine Gate. Natural boundaries are largely lacking between Germany and The Netherlands, and for the most part along the Belgian border. The eastern boundaries of Germany are entirely artificial—a line drawn in the peace treaties—and cannot be justified on geographical grounds.

Although the dense population and high degree of industrialization led to a desire for colonies, Germany was handicapped because the more desirable territories had been seized before it became a unified power. It did, however, secure some of the less desirable portions of Africa and a few local areas in the Pacific. Unfortunately these were unsuited for white colonization, and were economic liabilities rather than assets. All of these colonies were lost as a result of the World War, and today Germany possesses no territories outside of its own boundaries.

#### ACTIVITY IN POLITICAL THOUGHT

From the days of Plato to Lenin, Europeans have been evolving political philosophies and, where possible, putting them into practice. Some of these experiments have failed, but others have succeeded to such an extent that all progressive governments throughout the world are based upon European ideas. Some of these philosophies were influenced by existing physical conditions, and their number and importance are the reflection of a capable population living in a stimulating environment.

Representative government and democratic institutions developed in the congenial environment surrounding the North Sea. Two centers arose. The first was in Great Britain, where the self-reliance and spirit of cooperation of its fishermen may well have fostered the development of democratic institutions, while the protection afforded by its insular location enabled it to carry out its political experiments uninterrupted by outside interference. The second arose among the liberty-loving mountaineers of the Alps who, in their tiny cantons, early established democratic institutions and valiantly defended them against aggression by neighboring monarchs. From these centers democratic government spread to other portions of the continent and other sections of the

world. However, democratic institutions presuppose a population sufficiently advanced to take an intelligent part in the government, and sufficiently interested to carry out their duties as citizens. In Europe such a population is largely limited to the northwest and the center, and consequently it has been within those areas that such institutions have been most used and most successful.

Socialism is a political-economic philosophy which originated in Germany, and its greatest application has been among the industrial states of western Europe. While it is probable that a complete program of socialism has never been put into practice in any European country, with the possible exception of Russia, it has a large following in all the industrial sections of the continent. During the twentieth century this doctrine has also spread widely throughout other sections of the world.

Communism is another political-economic philosophy which has received wide attention. It is also most applicable to highly industrialized states, and consequently it is surprising to find its first large-scale application in agricultural Russia.

Another evidence of the diffusion of European political ideas is the spread of European systems of law. Today the legal system of practically every progressive people in the world is based either on Roman law or on the English common law. Vesting the executive power in a cabinet responsible to a legislative body is another European institution which is in wide use. These and many other political institutions are the result of European thought and political philosophy, and again illustrate the activity of that continent.

#### PRESENT POLITICAL PROBLEMS

The World War brought to Europe profound changes, the extent of which are yet to be fully appreciated. The destruction of physical wealth, the exhaustion of circulating capital, the tremendous debts incurred, and the disorganization of markets and productive agencies created economic problems which will confront the peoples of the continent for generations. Social changes also took place. Old concepts were abandoned, and society was pervaded with new ideas, which in some cases were anarchistic and in others constructive, but which in nearly all cases marked a decided change from what had gone before. The political changes were no less revolutionary, and the problems to which they gave rise will serve as a constant menace to European peace until they are solved.

Certain problems such as those concerned with inter-Allied debts,



disarmament, alliances, and the disposal of German colonies, are purely political and have little relation to geography. Others, such as the erection of trade barriers, will be considered in the discussion of European commerce. However, there remain such important problems as those concerned with boundaries and minorities, which are of interest from the point of view of political geography.

**Boundary Problems.**—The treaties of Versailles, St. Germain and Trianon established many new boundaries which corrected numerous existing evils but created at least an equal number of new ones. The new boundary between Germany and Poland broke up territorial continuity and economic unity, through the establishment of the Polish Corridor and the division of the Upper Silesian industrial area. Physical, ethnic and historical frontiers were alike disregarded in drawing the new boundaries of Hungary. The boundary between Austria and Italy, while strategically well located at the crest of the Brenner Pass, places a large number of Austrians under the Italian flag and leads to constant friction. Disputes of less immediate importance are those between Lithuania and Poland over the control of Wilno (Vilna), and between Russia and Rumania over the title to Bessarabia. These boundary difficulties breed misunderstanding and distrust, and constitute a serious menace to European peace.

A problem of the same character concerns the union of Austria with Germany (*Anschluss*). It seems doubtful whether mountainous Austria, with its limited resources and loss of markets, can maintain its economic independence, and accordingly many Austrians desire to join Germany, a country with a similar language and many common traditions. Such a union is specifically prohibited by the peace treaties unless permission is granted by the Council of the League of Nations. Opposition on the part of France and Czechoslovakia prevent this permission being given, and Austria continues to be kept alive by loans.

**Minority Problems.**—The principal minority groups which constitute serious problems are the 2,200,000 Germans in Poland; the 3,500,000 Germans in Czechoslovakia; the 250,000 Austrians in the Italian Tyrol, and the 3,000,000 Hungarians residing mostly in Rumania and Czechoslovakia. Although the peace treaties provided for the protection of the rights of minorities, such protection is difficult to assure. Minorities always form a disturbing element within a state, and oppression is often the result. Oppression means appeals to the home land and to the public opinion of the world, and endangers world peace. All are familiar with the part that French minorities in Alsace-Lorraine played in arousing misunderstanding and hatred

prior to the World War. The peace treaties, however, have set up several Alsace-Lorraines, thus multiplying the possibilities of this type of trouble in the future.

## BIBLIOGRAPHY

## HISTORY

- Benns, F. L., *Europe Since 1914*, F. S. Crofts & Co., New York, 1930.  
 Childs, V. G., *Dawn of European Civilization*, Alfred A. Knopf, New York, 1925.  
 Fletcher, C. R. S., *Making of Western Europe*, E. P. Dutton & Co., Inc., New York, 1912.  
 Gibbons, H. A., *The Europe of Our Day*, American Library Association, Chicago, 1927.  
 Grant, A. J., *Europe in the Nineteenth Century (1789-1914)*, Longmans, Green & Co., Ltd., London, 1927.  
 Hayes, C. J. R., *A Political and Cultural History of Modern Europe*, The Macmillan Company, New York, 1932.  
 Lawrence, D. H., *Moments in European History*, Oxford University Press, London, 1925.  
 Muir, R., *The Expansion of Europe*, Houghton Mifflin Company, New York, 1917.  
 ———, *Political Consequences of the Great War*, Henry Holt & Co., Inc., New York, 1931.  
 Slosson, P. W., *Twentieth Century Europe*, Houghton Mifflin Company, New York, 1927.  
 Thompson, J. M., *On Historical Geography of Europe, 800-1789*, Oxford University Press, New York, 1929.

## CULTURAL AND POLITICAL ACTIVITY

- Fisher, H. A. L., *Republican Traditions in Europe*, Methuen & Co., London, 1911.  
 Gibbons, H. A., *Introduction to World Politics*, The Century Company, New York, 1922.  
 Munro, W. B., *The Governments of Europe*, The Macmillan Company, New York, 1930.  
 Plum, H. G., and Benjamin, G. G., *Modern and Contemporary European Civilization*, J. B. Lippincott Co., Philadelphia, 1923.  
 Prescott, D. A., *Education and International Relations*, Harvard University Press, Cambridge, 1930.  
 Stoddard, T. L., *Social Classes in Post-War Europe*, Charles Scribner's Sons, New York, 1925.  
 Thompson, V., *Young Europe*, Doubleday, Doran & Co., Inc., New York, 1932.  
 Visher, S. S., "Geographic Influences in the Political Development of Europe," *Historical Outlook*, 1931, vol. 22.

## AGRICULTURE

## GENERAL ECONOMIC ACTIVITY

EUROPEAN man has so effectively utilized the resources of his tiny continent that it surpasses all others in economic productivity. Through the intelligent use of its soils he has brought forth agricultural products unequaled in both quantity and variety. But these ministered to only a portion of his needs, so he turned his attention to industry. Using science as his tool and the mineral and forest wealth of the continent as his raw materials, he constructed factories which are continuously pouring out a vast stream of finished products. To link the mine to the factory and the farm to the city he constructed a network of highways, waterways and railways unexcelled in density and efficiency. He has not been satisfied to be merely a pioneer in these various activities, but is constantly adding to and improving the machine which he has set up. Today the efficiency of this machine places Europe ahead of all other continents in the diversity and quantity of its economic products.

Huntington and Williams, in their excellent text, *Business Geography*, indicate something of the productivity of Europe by pointing out that it is the leading producer of twenty-five of the fifty-eight chief products of the world. Twelve of these twenty-five are of first rank, that is, the value of their annual production is in excess of one billion dollars. Europe's nearest competitor is North America, which leads in sixteen products, seven of which are of first rank.

The estimated wealth of Europe also indicates its economic leadership. In per capita wealth the continent ranks third, being surpassed by North America and Australia, but its larger population causes it to have a greater total wealth than either. It is estimated that Europe has a total wealth of approximately \$440,000,000,000, as compared with \$664,000,000,000 for the rest of the world combined. Wealth, products, industries and trade all point to the commanding position which Europe holds among the continents of the world.

AGRICULTURE

The vast grain fields of the east, the rich meadows of the west, and the irrigated gardens of the south enable Europe to surpass all other



The agricultural regions of Europe. (From "Agricultural Regions of Europe," by Oluf Jonasson, appearing in *Economic Geography*, vol. 2, p. 47.)

continents in quantity and variety of its agricultural products. Yet in spite of its tremendous production, its dense population and high living standards make it necessary to import foods and agricultural raw materials from all portions of the world.

CEREALS

In the production of cereals Europe's leadership is well marked. It produces more wheat, rye, oats and barley than any other continent,

and it ranks second in the production of corn and third in the production of rice. Its nearest competitor is North America, which leads in the production of corn and holds second place in the production of the other five major cereals.

**Wheat.**—Europe far exceeds any other continent in the production of wheat. This is evidenced by the fact that during the five-year period, 1926 to 1930 inclusive, it produced on the average of 49 per cent of the total world supply. Its position in this respect is being strengthened by the increasing production of Russia, although the continent has not as yet recovered the relative position it occupied prior to the World War.

TABLE II  
PRODUCTION OF WHEAT IN THE LEADING EUROPEAN COUNTRIES  
(thousands of bushels)<sup>a</sup>  
(U. S. Department of Agriculture)

Country	1909-1913 <sup>b</sup>	1926-1930	1932
World.....	3,779,242	4,438,141	.....
United States.....	690,108	859,005	726,831
Europe.....	2,106,941	2,168,543	.....
Bulgaria.....	37,823	44,711	50,553
France.....	325,644	271,510	331,359
Germany.....	131,274	123,965	183,827
Hungary.....	92,037	82,075	58,593
Italy.....	184,393	223,049	276,128
Poland.....	63,675	61,742	55,888
Rumania.....	158,672	110,737	73,486
Russia.....	758,941	829,543	.....
Spain.....	130,446	143,002	178,282
Yugoslavia.....	62,024	81,323	53,444

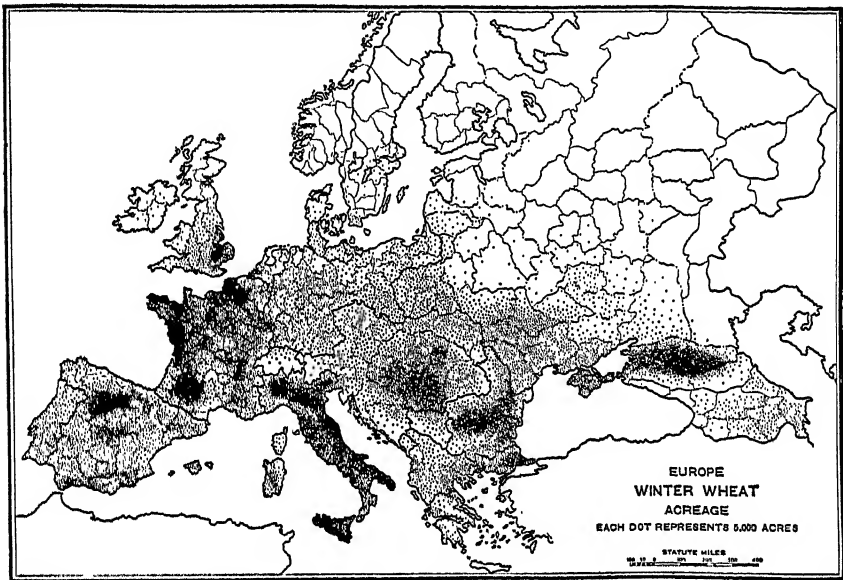
<sup>a</sup> Note that the numbers of this and many succeeding tables are given in thousands. This means that three ciphers (ooo) are omitted from each number. When comparing and studying the numbers, read them in full as if the three added ciphers were printed in the table. Note also that in this and in all following tables, unless otherwise specified, Russia includes both the European and Asiatic portions of that country. This is done because no official statistics are available which apply only to European Russia. To interpret these numbers properly, it should be remembered that Asiatic Russia is sparsely populated and economically backward, and that consequently the greater portion of agricultural and industrial production and commercial activities occurs in the European portion of the nation.

<sup>b</sup> Present boundaries.

The fertile steppes extending from Bessarabia to the southern Urals produce the major part of the spring wheat in Europe. Here the early spring rains are favorable, while the severe winters prohibit the raising of the winter varieties. As one moves westward from this center the winters become milder, and winter wheat replaces the spring variety. This first becomes important in the plains of Rumania and Hungary, but occurs in every nation as far as the Atlantic. Unfortun-

nately, throughout most of central and western Europe either soil or relief is unsuitable for wheat culture. France is a notable exception to this, and ranks second to Russia as a producer. The large French production is not due entirely to physical factors, for the government has used various forms of tariffs and subsidies to encourage the growth of this crop. Toward the south the moist, mild winters of the Mediterranean lead to a large production in Italy and Spain.

Throughout most of Europe the yield of wheat per acre is greater than in the United States, but physical and human factors cause it to



This map shows the pre-war distribution of winter wheat. The present distribution is approximately the same except for slight relative increases on the part of Italy and Russia. (U. S. Department of Agriculture.)

vary widely in different portions of the continent. It is greatest in the northwest, where the cultivation is intensive and only the best soils are used. It decreases toward both the south and the east, due to more backward methods of cultivation and the use of less desirable lands.

**Oats.**—Europe normally produces some 62 per cent of the world's supply of oats. This cereal is most important in the region of cool, moist summers to the north and west of the wheat belt. However, the abundance of livestock in all portions of central and western Europe causes it to be extensively grown in these areas.

**Rye.**—The poor soils of much of the European plain cause rye to replace wheat as the principal bread grain in such countries as Germany, Poland and Russia. The extent of land of this type is responsible for

TABLE 12

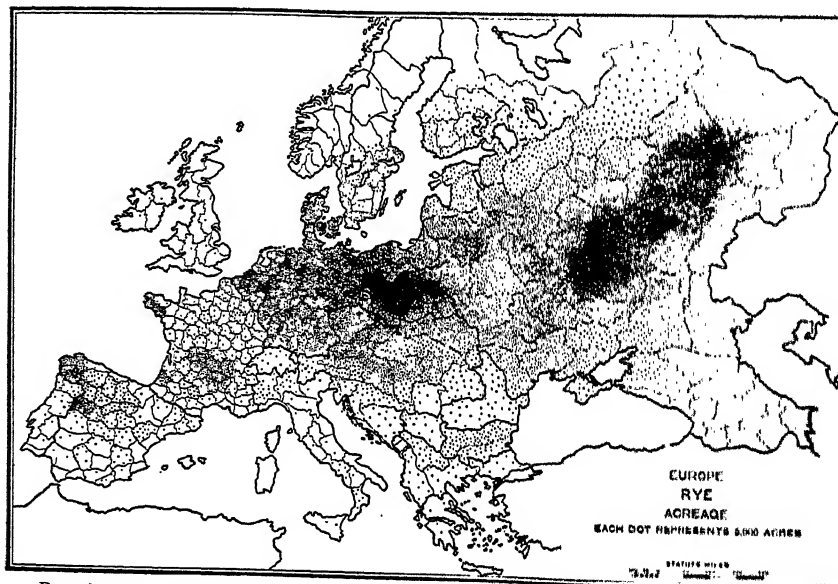
PRODUCTION OF OATS IN THE LEADING EUROPEAN COUNTRIES  
(thousands of bushels)  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>a</sup>	1926-1930	1932
World.....	4,505,918 <sup>b</sup> <sup>c</sup>	4,721,919 <sup>c</sup>	.....
United States.....	1,143,407	1,253,005	1,242,437
Europe.....	2,855,918 <sup>b</sup>	2,961,719	.....
Czechoslovakia.....	96,147	95,431	114,627
Denmark.....	60,557	66,831	.....
Great Britain.....	141,420	148,777	130,783
Germany.....	527,178	450,646	458,143
Poland.....	195,825	196,184	103,962
Rumania.....	59,776	76,102	52,538
Russia.....	924,918	1,047,719	.....
France.....	368,462	344,708	353,381
Sweden.....	86,050	82,417	77,595

<sup>a</sup> Present boundaries.

<sup>b</sup> One year only.

<sup>c</sup> Excluding China.



Rye is the characteristic bread grain of the poor soils of the European plain. Russia and Poland have increased their production as compared with pre-war years, while production in Germany has declined. (U. S. Department of Agriculture.)

the fact that Europe normally produces some 95 per cent of the world's supply of this cereal.

**Barley.**—Europe produces slightly more barley than all of the rest of the world combined. This crop is particularly important where summer droughts restrict the growing season, as in southern Russia,

TABLE 13  
PRODUCTION OF RYE IN LEADING EUROPEAN COUNTRIES  
(thousands of bushels)  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>a</sup>	1926-1930	1932
World.....	1,773,197 <sup>b</sup>	1,811,688 <sup>b</sup>	.....
United States.....	36,093	44,531	39,855
Europe.....	1,713,505	1,733,892	.....
Czechoslovakia.....	63,538	62,004	85,660
Germany.....	368,337	296,013	329,273
Poland.....	218,943	240,331	252,398
Russia.....	735,505	867,092	.....

<sup>a</sup> Present boundaries.

<sup>b</sup> Excluding China.

Spain and northern Africa; or where it is desired for malting or food purposes, as in Germany, Poland and Czechoslovakia.

TABLE 14  
PRODUCTION OF BARLEY IN THE LEADING EUROPEAN COUNTRIES  
(thousands of bushels)  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>a</sup>	1926-1930	1932
World <sup>b</sup> .....	1,843,030	1,872,000	.....
United States.....	184,812	278,623	299,965
Europe.....	1,120,030	1,002,000	.....
Czechoslovakia.....	71,108	59,455	69,119
France.....	52,826	50,375	53,678
Germany.....	133,787	134,006	147,647
Poland.....	69,055	72,018	70,605
Rumania.....	61,677	87,903	82,216
Russia.....	418,030	270,000	.....
Spain.....	74,689	94,301	127,267

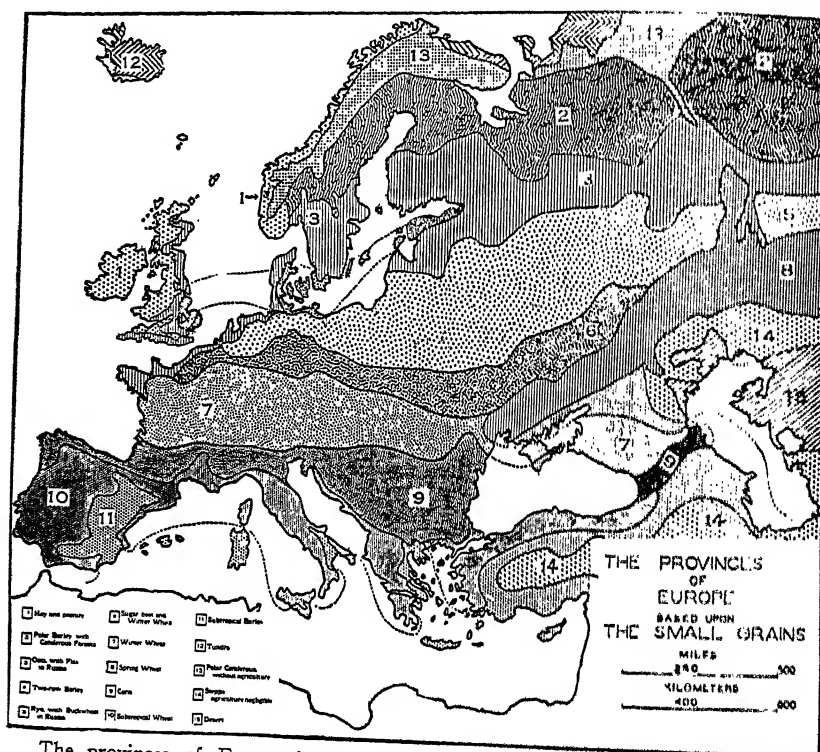
<sup>a</sup> Present boundaries.

<sup>b</sup> Excluding China.

**Corn.**—Following the introduction of corn from America early in the sixteenth century, its production has spread rapidly in those sections of Europe where the climate and soil are favorable. Nevertheless, that continent is still far behind North America, and at present produces approximately only one-sixth of the world's supply. Most of it is grown in southeastern Europe, where the plentiful sunshine and frequent summer showers render climatic conditions favorable. In this area corn is extensively used as a human food, a condition which is partially due to the fact that under the Turkish Empire pressure was brought to bear on the conquered people to eat corn and turn their



wheat over to the Turkish tax collectors. Even in Italy and other regions never under the influence of the Turk, corn forms an important item of diet among the peasants.



The provinces of Europe based upon the small grains. (From "Agricultural Regions of Europe," by Olof Jonasson, appearing in *Economic Geography*, vol. 1, p. 283.)

TABLE 15  
PRODUCTION OF CORN IN LEADING EUROPEAN COUNTRIES  
(thousands of bushels)  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>a</sup>	1926-1930	1932
World.....	4,178,185	4,333,000	.....
United States.....	2,712,364	2,573,956	2,908,045
Europe.....	633,185	688,000	.....
Hungary.....	60,813	64,102	95,893
Italy.....	102,676	96,931	118,703
Rumania.....	193,209	183,289	224,397
Russia.....	52,185	121,000	.....
Yugoslavia.....	111,897	117,709	177,939

<sup>a</sup> Present boundaries.

**Rice.**—Physical limitations cause Europe to lag far behind Asia in rice production. Only in the warm, moist lowlands of the Mediterranean are conditions suitable, and even there irrigation is necessary.

TABLE 16  
PRODUCTION OF RICE IN LEADING EUROPEAN COUNTRIES  
(million pounds of cleaned rice)<sup>a</sup>  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>b</sup>	1926-1930	1932
World <sup>c</sup> .....	109,000	128,200	...
Spain.....	300	418	433
Italy.....	646	907	894
Portugal.....	23	29	...
Bulgaria.....	9	22	22

<sup>a</sup> Note that the numbers of this and a few later tables are given in millions. This means that six ciphers (000,000) are omitted from each number. Read the numbers in full as if the six added ciphers were printed in the table. In comparing rice production, given in pounds, with production of other cereals, given in bushels, remember that a bushel of cleaned rice weighs approximately sixty pounds.

<sup>b</sup> Present boundaries.

<sup>c</sup> Excluding China.

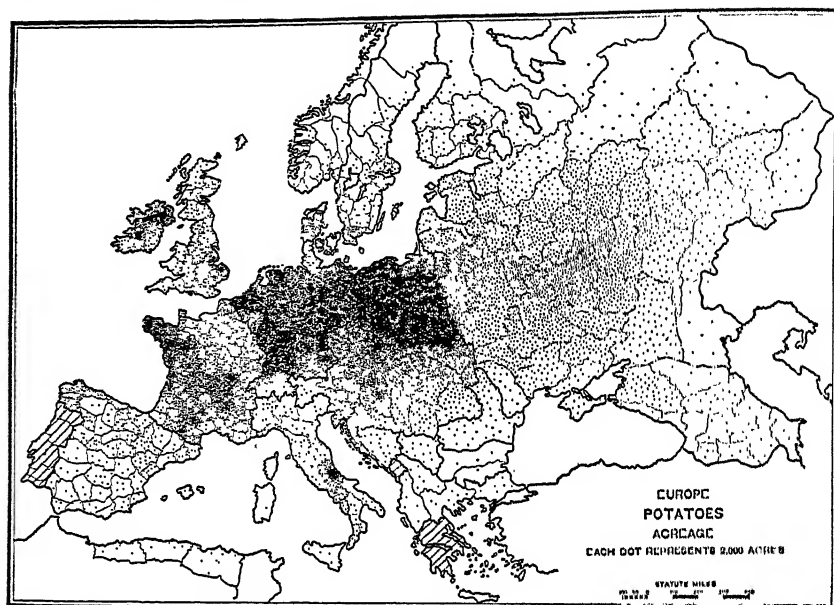
## ROOT CROPS

In the production of the two major root crops, potatoes and sugar beets, Europe far surpasses all the other continents combined. These have had an important influence upon the density of population and the economic life of the continent since their introduction.

**Potatoes.**—Although the potato is of American origin, it was quickly adopted in Europe, and became of major importance in that continent. The fact that potatoes yield a large amount of food per acre has been one of the factors making possible the dense populations to be found in many portions of Europe. Today Europe produces approximately 90 per cent of the world's supply of potatoes, and this crop assumes an importance equivalent to that of corn in the United States or rice in the Orient.

Potatoes are most important in that section of the European plain extending from central Russia to the British Isles. Here a cool, moist climate is favorable, and the poor soils limit the production of competing crops. Potatoes thus occupy much the same regions as rye throughout the continent.

**Sugar Beets.**—Although the presence of sugar in beet roots was discovered in 1747, it was not until much of the continent was cut off from sources of cane sugar during the Napoleonic Wars that the sugar beet assumed commercial importance. The beet sugar industry developed



Europe produces the great majority of the world's potatoes. The distribution is much the same as in pre-war years except for the rapid increase in production on the part of both Russia and Poland. (U. S. Department of Agriculture.)

slowly at first, but was later encouraged in many European countries by protective tariffs and direct and indirect bounties. These were justi-

TABLE 17  
PRODUCTION OF POTATOES IN LEADING EUROPEAN COUNTRIES  
(thousands of bushels)  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>a</sup>	1925-1929	1932
World <sup>b</sup> .....	5,463,728	6,753,067	.....
United States.....	357,699	374,520	356,589
Europe.....	4,905,728	6,137,067	.....
Germany.....	1,373,609	1,400,991	1,727,540
Russia.....	740,728	1,604,067	.....
Poland.....	889,531	972,152	989,492
France.....	526,793	524,505	583,045
Czechoslovakia.....	245,210	310,025	308,720
Spain.....	112,997	139,671	188,526
The Netherlands.....	104,051	121,249	135,215
United Kingdom.....	254,441 <sup>c</sup>	198,501	142,015 <sup>d</sup>
Belgium.....	110,830	124,585	129,503

<sup>a</sup> Present boundaries.

<sup>b</sup> Excluding China.

<sup>c</sup> Including Irish Free State.

<sup>d</sup> 1931.

fied by the contention that this crop improved the soil, assisted in diversifying agriculture, assured a domestic supply of sugar in case of war, and provided employment for many laborers. As a consequence of this policy, Europe at present produces 88 per cent of all the sugar beets raised throughout the world.

Sugar beets are most important in the more fertile portions of the European plain, although considerable amounts are also raised in the Czech Basin, the Hungarian plain and northern Italy. All of these areas



Men and women alike work in the harvest fields of Poland. (H. J. Smith.)

have the moderate temperatures, well distributed rainfall and abundant labor supply so essential to this crop.

#### FRUITS AND VEGETABLES

The dense populations of southern and western Europe create a large demand for vegetables, and provide the truck farmer with an abundant labor supply. They also consume a great amount and variety of fruit, the growth of which is favored by the varied climate of Europe.

**Temperate Fruits.**—Comparable data are lacking concerning the production of temperate fruits in the various European countries. However, northwestern Europe produces apples, pears, plums and cherries in abundance. In the mild, moist climate of southwestern Eng-

TABLE 18

PRODUCTION OF SUGAR BEETS IN LEADING EUROPEAN COUNTRIES<sup>a</sup>  
(thousands of short tons)  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>b</sup>	1926-1930	1932
World.....	61,579	68,811	.....
United States.....	4,860	7,718	8,991
Germany.....	14,679	12,868	8,231
Russia.....	10,636	9,791	15,432 <sup>c</sup>
France.....	6,544	6,949	7,743
Czechoslovakia.....	8,328	7,258	4,055
Poland.....	4,611	4,836	2,612
Italy.....	1,983	2,898	2,750
United Kingdom.....	29 <sup>d</sup>	2,089	2,246
The Netherlands.....	1,977	2,298	1,731

<sup>a</sup> Note that this table concerns sugar beets and not beet sugar. The sugar content of the beet averages from fourteen to sixteen per cent. The annual average world production of beet sugar for the five-year period, 1926 to 1930 inclusive, was 10,201,000 short tons.

<sup>b</sup> Present boundaries.

<sup>c</sup> 1931.

<sup>d</sup> Two-year average.

land, Normandy and northern Spain, apples are an important crop. They are also produced extensively in southern Germany and in many other sections of central Europe. Production continues into those portions of southern Europe where the rainfall is well distributed, but the cultivation is less intensive in these areas, and consequently the production per acre is less. Peaches are to be found south of the apple district in such sections as southern France, Spain and other Mediterranean lands.

**Mediterranean Fruits.**—Citrus fruits are very definitely limited by climate, and are confined to those areas where severe frosts are lacking. In France and Italy their northern limit is about the forty-fifth parallel, which is farther north than they are raised in any other part of the world. This is largely due to the moderating influence of the Mediterranean on temperature, and to the Alpine barrier which shuts out the cold winds of northern Europe. The Valencia district of Spain leads in the production of oranges, and Italy and Sicilia occupy second position. Spain leads the world in the export of oranges, and Italy leads all other countries in the production and export of lemons. Much citrus fruit moves from the Mediterranean region to the markets of northwestern Europe.

The drought-resisting qualities of the olive make it the characteristic crop of the region of dry summers surrounding the Mediterranean Sea. Although Italy has the largest acreage devoted to this crop, Spain

normally leads in the production of olive oil. Olives are raised throughout all the Mediterranean countries, and olive oil replaces animal fats as an item of human diet in much of this region.

TABLE 19  
PRODUCTION OF OLIVE OIL IN LEADING EUROPEAN COUNTRIES<sup>1</sup>  
(thousands of pounds)

Area	1926-1930	1931
World. ....	1,788,372 <sup>a</sup>	1,962,094 <sup>a</sup>
Europe. ....	1,553,361 <sup>a</sup>	1,697,642 <sup>a</sup>
Spain. ....	997,361	830,915
Italy. ....	423,283	482,469
Greece. ....	180,998	195,107
Portugal. ....	98,766	150,354

<sup>a</sup> Estimate.

**Grapes and Wine.**—To mature properly, the grape requires a warm and fairly long summer. This factor determines its northern limit, which in Europe extends from the southern coast of Brittany northeast to include the valley of the Moselle and the Upper Rhine, then southeast through Austria and Hungary to the Caucasus. Although some famous grape- and wine-producing regions lie near this northern border, most of the grapes in Europe are grown in the region of the Mediterranean climate. Italy has the greatest acreage, but because of more intensive cultivation France leads in production. Spain and Greece are other Mediterranean nations which produce many grapes.

TABLE 20  
PRODUCTION OF WINE IN LEADING EUROPEAN COUNTRIES<sup>2</sup>  
(thousands of gallons)

Area	1909-1913	1927-1931
World. ....	3,728,919	4,550,194
Europe. ....	3,312,011	3,771,637
France. ....	1,326,971	1,485,782
Italy. ....	517,885	1,020,314
Spain. ....	392,680	595,559
Portugal. ....	107,661	173,976

**Market Gardening.**—Accurate data are lacking concerning the production of truck products, but in general it can be said that it

<sup>1</sup> *Statistical Yearbook of the League of Nations, 1931-32.*

<sup>2</sup> *Ibid.*

corresponds closely to the density of population. Near the great urban districts of northwestern Europe large areas are devoted to market gardening. The warmer regions around the Mediterranean not only supply their own needs for such products, but send large amounts to the northern portions of the continent during the winter period. However, the major part of such products are used locally. The Netherlands is the only country in northern Europe which exports important amounts



The bulb fields near Haarlem during the period of bloom. (Courtesy of the Netherlands Railways.)

of truck products. Here the long and stable growing season, the well distributed rainfall, the sandy soil near the dunes, and the proximity to great markets provide ideal conditions for their production.

#### INDUSTRIAL FIBERS

Cotton is the only important industrial fiber which Europe does not produce in commercial quantities. The fact that it ranks first in the production of flax fiber and hemp, and second in silk and wool, has aided in making it the leading continent in the manufacture of textiles. Since the development of the factory system its industries and population have outgrown the domestic supply of many of these fibers and it has had to import large amounts each year.

**Wool.**—Only Australasia exceeds Europe as a producer of wool. Sheep are raised in all portions of the continent, but there are three major centers of production. The first is in the northwest, with the British Isles as its center; the second is in the Mediterranean region, with Spain as the leading producer; and the third is in the east, where Russia and Rumania lead.

TABLE 21  
PRODUCTION OF WOOL IN LEADING EUROPEAN COUNTRIES<sup>1</sup>  
(thousands of metric tons)

Area	1926-1930	1931
World.....	1,630.9	1,664.0
Europe.....	384.3	325.8
Russia.....	150.4	99.8
United Kingdom.....	54.9	50.8
Spain.....	38.5	39.1
Rumania.....	25.5	24.7
France.....	21.1	20.3
Germany.....	15.5	14.7
Italy.....	14.4 <sup>a</sup>	....

<sup>a</sup> 1926-1929.

**Silk.**—The mulberry tree can be widely raised throughout Europe, but the more favorable climate, combined with the large supplies of cheap labor, confine the raising of the silkworm to the Mediterranean district. Higher labor costs and the less favorable climate are making it increasingly difficult for Europe to compete with the Orient in this activity. As a consequence, the production of raw silk has declined in France and Spain, but is still important in Italy.

TABLE 22  
PRODUCTION OF RAW SILK IN LEADING EUROPEAN COUNTRIES<sup>2</sup>  
(metric tons)

Area	1926-1930	1931
World.....	56,680	58,090
Europe.....	5,393	3,820
Italy.....	4,605	3,286
France.....	215	80
Greece.....	150	200
Spain.....	76	44

<sup>1</sup> *Statistical Yearbook of the League of Nations, 1931-32.*

<sup>2</sup> *Ibid.*



**Flax.**—Although flax is extensively raised in other areas, Europe produces nearly all the world's supply of flax fiber. This crop grows best in the cool, moist summer of the European plain, and is found from central Russia to the British Isles. Belgium and The Netherlands produce the finest fiber, although Russia exceeds all other nations in the quantity raised.

TABLE 23  
PRODUCTION OF FLAX FIBER IN LEADING EUROPEAN COUNTRIES  
(thousands of pounds)  
(U. S. Department of Agriculture)

Area	1909-1913 <sup>a</sup>	1926-1930	1932
World.....	1,219,700	1,354,960	.....
Europe.....	1,115,141	1,302,482	.....
Russia.....	739,990	792,602	.....
Poland.....	47,336	127,377	57,320
Lithuania.....	49,703 <sup>b</sup>	74,798	27,070
Belgium.....	51,888 <sup>c</sup>	54,179	14,887
Latvia.....	63,318 <sup>b</sup>	43,954	20,877
France.....	40,732	55,978	14,941

<sup>a</sup> Present boundaries.

<sup>b</sup> Flax and hemp.

<sup>c</sup> Three-year average.

**Hemp.**—Europe also produces most of the world's hemp. Russia produces more than all the rest of the world combined, the center of greatest production being in central Russia. The finest fiber comes from Italy, which ranks second to Russia in production.

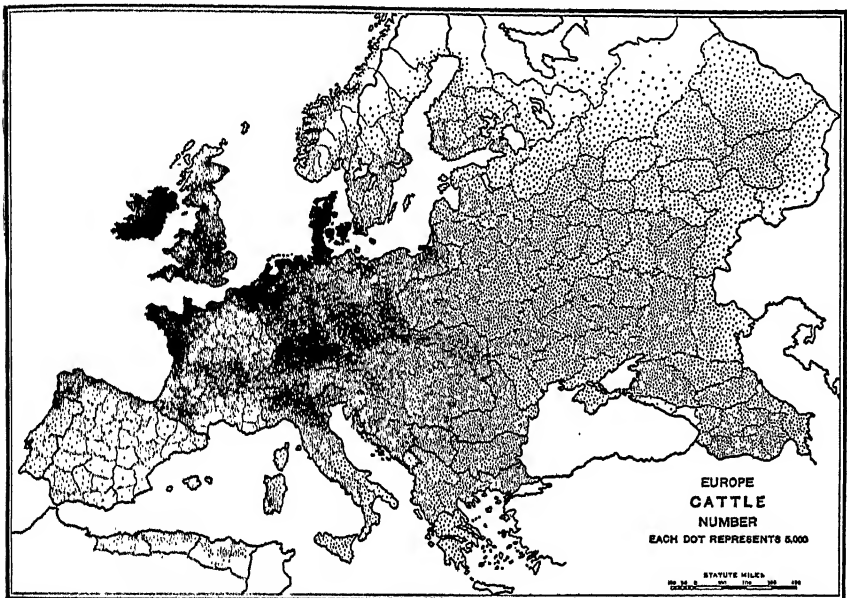
#### LIVESTOCK

Europe has a commanding lead among the continents in the raising of most types of livestock. It ranks first in the number of horses and sheep, and second in the number of cattle and swine. Animals are most numerous in northwestern Europe, where the climate is well suited to the raising of forage crops, and the human population is most dense. On the other hand, in the steppe regions of southeastern Europe the number of livestock per capita is large, but the number per square mile is small.

**Horses.**—The distribution of horses in Europe corresponds quite closely to the distribution of population and cultivated land, except in the south. In the far northern sections the reindeer replaces the horse, while in the south it is replaced by the mule or ass. Most of the horses of the continent are raised on the European plain, from England and

western France to central Russia. Russia has the greatest total number and the greatest number per capita, while the North Sea district has the greatest number per square mile.

**Cattle.**—The western margin of Europe has ideal conditions for the raising of most breeds of cattle. Here the cool, moist summers favor the luxuriant growth of grass and other forage crops, while the open winters permit grazing throughout most of the year. The fact that the most widely used breeds of beef and dairy cattle were de-



The density of cattle per square mile is greatest in northwestern Europe, while the density per capita is greatest in the east. (U. S. Department of Agriculture.)

veloped in this region illustrates its excellence. The names Jersey and Guernsey indicate the origin of these breeds on the two Channel Islands of those names. The Holsteins originated on the northern coast of The Netherlands, while Great Britain produced such famous breeds as the Shorthorn, Herford, Aberdeen-Angus, Devon and Galloway. In addition to the ideal natural conditions, this portion of the continent has a dense population and many large urban centers, with a consequent demand for beef and dairy products. It is, therefore, not surprising to find more cattle per square mile in this region than in any other portion of Europe. The Irish Free State, The Netherlands, Denmark, a large part of Belgium, and important areas in Brittany, Normandy and northern France have at least 156 cattle per square mile. The

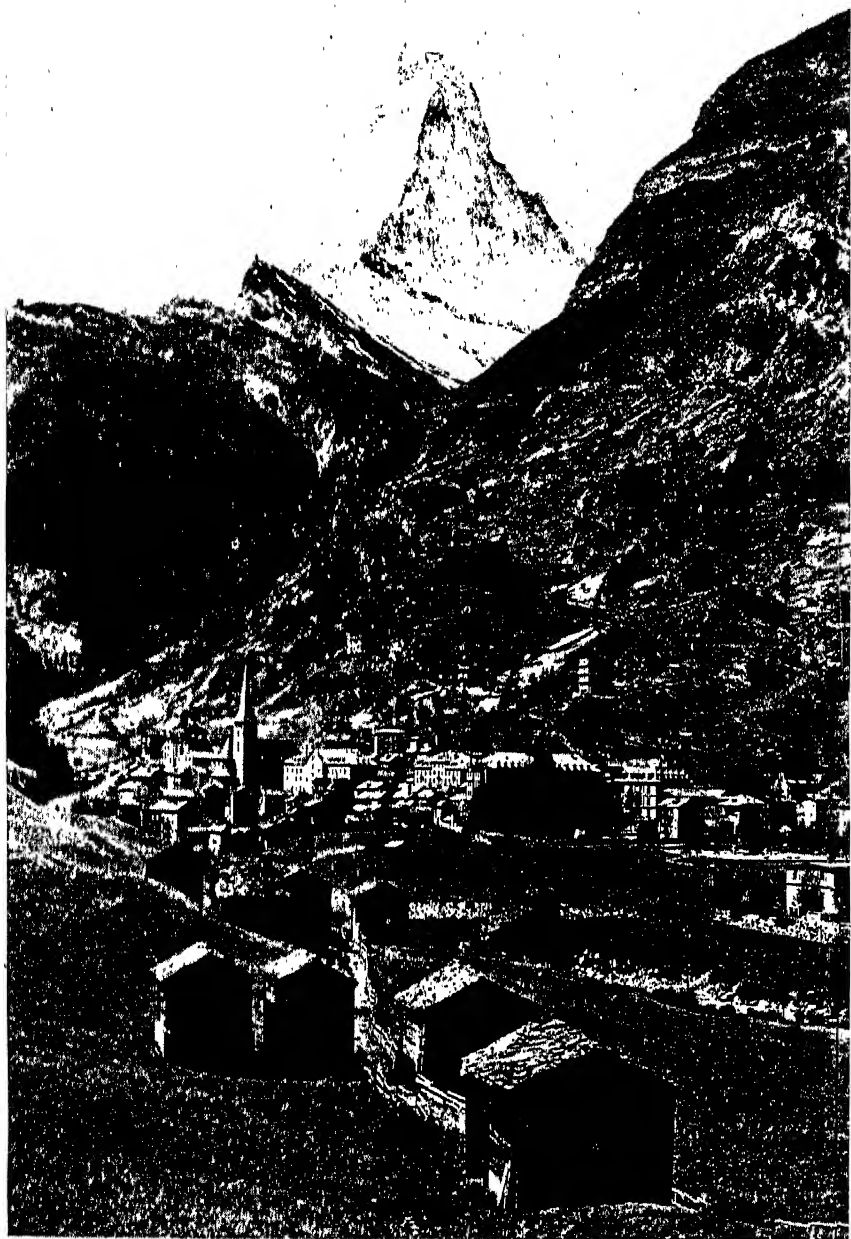
density continues great throughout much of Germany, western Poland and the Czech Basin. Eastern Europe has large numbers of cattle, but they are more thinly scattered over wide areas, although the number per thousand inhabitants is quite large. The lower living standards of this section decrease the per capita demand for meat and dairy products. The Po Basin is the only portion of the Mediterranean region where the physical conditions are suitable for the raising of large numbers of cattle.

Throughout most of northern, western and central Europe cattle are raised primarily for dairy purposes, and although the beef production is large, it is usually incidental to the production of raw milk, butter and cheese. One of the most noteworthy trends in the agriculture of this section has been an increase in the dairy industry. In this area, also, great care is usually taken in the breeding and raising of the cattle, and the production of beef and dairy products per animal is great. In the less densely settled sections of eastern Europe cattle are frequently produced primarily for beef purposes, but the cattle are, for the most part, poor and rather inefficient meat producers.

**Swine.**—The distribution of swine in Europe is governed largely by the presence of desirable foods. The tremendous production of Germany, Belgium, The Netherlands and Denmark can be accounted for largely by the abundance of such foods as potatoes, barley and dairy by-products. To the southeast, in the Hungarian and Rumanian plains, the presence of corn leads to the raising of considerable numbers of these animals. Toward the south they decline sharply, and are of importance only in the oak forests of Spain, Portugal and Yugoslavia, and in the well watered plains of northern Italy.

**Sheep.**—Sheep raising is usually confined to those regions where more profitable forms of agriculture cannot be carried on. Sheep are better adapted than any other domestic animal, except the goat, to rugged and dry regions, and can thrive on grass so short that horses and cattle cannot bite it off. These factors cause sheep to be important in the dry, rugged areas of southern Europe. This is true of the Balkan, Italian and Iberian Peninsulas, as well as of Asia Minor and northern Africa. In these areas sheep and goats largely replace cattle, and are raised for both wool and milk.

A second center of production is in Great Britain, where sheep are raised primarily for meat, their wool being rather coarse. The importance of this region is shown by the fact that it has developed over 30 distinct breeds which are widely used throughout the world.



The inhabitants of such high settlements as Zermatt, in Switzerland, must depend upon dairying and catering to the tourist for their means of livelihood. (Courtesy of A. Klopfenstein, Adelboden, and the Swiss Federal Railroads.)

**Goats.**—Goats are found mostly in the dry, rugged portions of the Balkan Peninsula and other portions of the Mediterranean region. They are raised largely for their milk, which replaces cows' milk in these areas.

TABLE 24  
LIVESTOCK—THE NUMBER OF CATTLE, SHEEP, GOATS AND SWINE IN THE PRINCIPAL  
EUROPEAN COUNTRIES, 1930<sup>1</sup>  
(in thousands)

Area	Cattle		Sheep		Goats		Swine	
	Average <sup>a</sup> 1909-1913	1930	Average <sup>a</sup> 1909-1913	1930	1913 <sup>a</sup>	1930	Average <sup>a</sup> 1909-1913	1930
United States.....	56,750	59,730	43,235	51,383	3,030	3,564 <sup>b</sup>	53,300	55,301
Western Europe								
Germany.....	18,474	18,033	4,988	3,480	3,164	2,578	22,533	19,944
France.....	15,338	15,631	16,176	10,452	1,510	1,675	7,529	6,102
Great Britain....	7,046	7,083	25,374	23,938	.....	48	2,440	2,453
Sweden.....	3,069	3,060	1,205	652	71	92 <sup>b</sup>	1,023	1,083
Netherlands.....	2,062	2,366	842	485	232	131	1,305	2,018
Denmark.....	2,717	3,057	533	193 <sup>b</sup>	40	.....	2,715	4,872
Czechoslovakia..	4,596	4,458	1,322	831	711	1,081	2,516	3,088
Eastern Europe								
Poland.....	8,664	9,400	4,473	2,490	.....	227	5,487	6,047
Russia.....	60,280	53,800	111,051	100,600	9,782	22,321 <sup>b</sup>	20,336	13,200
Rumania.....	5,648	4,355	11,128	12,092	187	353	3,262	2,300
Southern Europe								
Bulgaria.....	2,048	2,266	8,551	7,986 <sup>b</sup>	1,465	1,261	546	1,003
Greece.....	665	874	5,884	5,806	2,638	4,637	346	276
Yugoslavia.....	5,155	3,812	10,496	7,953	631	1,731	3,956	2,800
Italy.....	6,590	6,902	11,615	9,896	2,715	1,792	2,685	3,157
Spain.....	2,587	3,660 <sup>b</sup>	15,778	19,370 <sup>b</sup>	3,394	4,525 <sup>b</sup>	2,544	4,773 <sup>b</sup>

<sup>a</sup> Present boundaries.

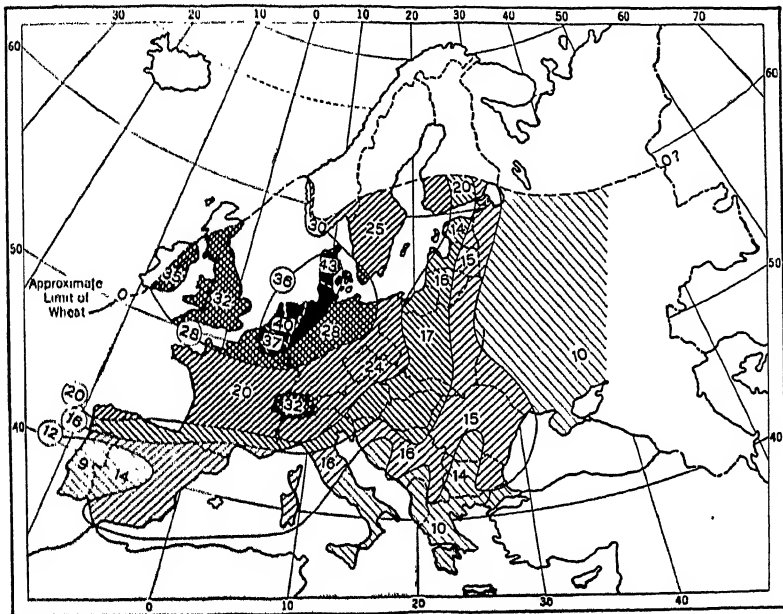
<sup>b</sup> 1929.

### VARIATIONS IN AGRICULTURAL ACTIVITY

The amazing diversity of physical environment and human development which characterize Europe leads to a variety of crops and agricultural productivity. In the western portion of the European plain, including southern England, northern France, Belgium and The Netherlands, is the most productive and highly developed agricultural region of Europe. Here relatively level relief, favorable climate and moderately fertile soil combine with excellent transportation facilities and nearness to large markets, and give rise to one of the most productive agricultural areas in the world. Judged on the basis of the number of important products produced and the production per acre, this region is superior to any area of equal size in the United States.

<sup>1</sup> *Statistical Yearbook of the League of Nations, 1931-32.*

Proceeding eastward in the European plain, agriculture differs from that of the North Sea region in being less diversified or less intensive. In northern Germany the poor soil and shorter growing season restrict the number of crops that can be raised. Such grains as barley and rye, and such root crops as potatoes and sugar beets, assume major importance. Animals also become relatively more important, and the amount of waste land is much greater. Going farther east into Poland, crops become even less diversified. By far the largest acreage is given



Average annual European yield of wheat per acre, in bushels, 1910-1929. (Reprinted by permission from *Economic and Social Geography*, by Huntington, Williams and Van Valkenburg, published by John Wiley & Sons, Inc.)

to rye, although barley, oats, wheat, sugar beets, potatoes and flax are grown in some quantities. In the new Baltic States the same crops are raised, although wheat declines in importance. Here and in Finland there is a tendency to give increasing attention to the raising of animals, and dairying is on a rapid increase. In Russia the restrictive influences of climate and soil, combined with the retarded human development, lead to the dominance of one-crop agriculture. In the north are to be found the same types of crops as in the new Baltic States, while in the south grains dominate, wheat being the most characteristic crop. South of the cultivated regions extensive grazing is carried on, and this leads, in some sections, to a nomadic type of existence. Thus, as the

central plain of Europe is followed from west to east, agriculture tends to diminish in intensity and diversity due to restrictions of soil and climate or to differences in the stage of development of the populations.

TABLE 25  
YIELD OF WHEAT PER ACRE IN REPRESENTATIVE  
EUROPEAN COUNTRIES  
(bushels)  
(U. S. Department of Agriculture)

Country	1932
The Netherlands.....	40.7
Belgium.....	38.6
Germany.....	32.6
England and Wales.....	32.0
Hungary.....	15.0
Poland.....	13.1
Russia.....	12.3 <sup>a</sup>
Yugoslavia.....	11.1
Rumania.....	10.4
Greece.....	7.5 <sup>b</sup>
Italy.....	22.6
Spain.....	15.9

<sup>a</sup> 1930.

<sup>b</sup> 1931.

While the central European plain contains the major portion of the agriculture of the continent, there are certain other comparatively level areas which are important producers of both crops and animals. The more outstanding regions of this type are the basin of the Aquitaine, the basin of the Guadalquivir in Spain, the Po Basin in northern Italy, the Hungarian plain, and the Rumanian plain. Certain of these regions, such as the Hungarian plain, produce a diversity of products almost equal to the North Sea center, but in none of them is cultivation so careful or so intensive.

From the above discussion, and from the tables showing variations in the production of wheat and rye, it is evident that the most productive agricultural district of Europe is the one surrounding the North Sea. Throughout the continent, climate, soil or relief, or a combination of these factors, will account for the particular type of agricultural development to be found locally. These factors influence the crops and animals raised, as well as the productivity per acre of the region. Fortunately, Europe has few areas where agriculture of some form cannot be carried on; and the fact that this small continent leads the world in agricultural activity is an excellent illustration of the economic productivity so characteristic of its people.

TABLE 26  
YIELD OF RYE PER ACRE IN REPRESENTATIVE  
EUROPEAN COUNTRIES  
(bushels)  
(U. S. Department of Agriculture)

Country	1932
Belgium.....	35.0
Netherlands.....	33.6
Sweden.....	33.8
Germany.....	29.9
Poland.....	18.1
Russia.....	13.6 <sup>a</sup>
Hungary.....	20.5
Rumania.....	15.1
Yugoslavia.....	13.9
Greece.....	10.5 <sup>b</sup>
Italy.....	21.8
Spain.....	15.7

<sup>a</sup> 1930.

<sup>b</sup> 1931.

**Irrigation.**—Europe is fortunate in having a smaller area where irrigation is essential than has any other continent. In spite of this, irrigation is locally important around the western Mediterranean. Its centralization in this region is due partially to physical and partially to human factors. This area has large alluvial plains which are watered by snow- and glacier-fed streams from the neighboring mountains. Also this western Mediterranean section has fairly easy access to the great markets of northwestern Europe, and has progressed further in the development of scientific agriculture than any of the other dry sections of the continent.

The principal nations of this region are France, Italy, and Spain. France contains about 6,000,000 acres under irrigation, chiefly in the southern part. On these lands are produced not only fruits and vegetables, but also such staple agricultural products as grains. The Moors were responsible for the development of irrigation in Spain, and the Spaniards have never been able to improve on the Moorish system. Spain today has approximately 3,000,000 acres of irrigated lands. In Italy the greatest development of irrigation is in the western portion of the Po Basin. Here not only fruits, vegetables and diversified farm products are raised, but even meadows are improved by the artificial application of water. Italy as a whole has some 4,000,000 acres of irrigated lands. There is very little irrigation in Europe outside of these three countries, although Russia has an ambitious program for the extension of its irrigated acreage; and if this is completed, it will



place that country with the three just considered as European leaders in this type of development.



Rye, the characteristic bread grain of the North German Plain. (Courtesy of the German Tourist Information Office, New York.)

### PROBLEMS OF EUROPEAN AGRICULTURE

In spite of its high degree of productivity, European agriculture is faced with a number of serious problems. Some of these are of ancient origin, and have their roots in the systems of land tenure and modes of living of the Middle Ages. Others have but recently come into being, and are the results of the economic evolution which followed the Industrial Revolution. The static condition of European society prior to the World War retarded any adequate solutions, but since that struggle the fluid state of political and economic thought has made possible material progress.

**Land Tenure.**—Europe has long been troubled by a great mass of landless peasants which arose as a result of the rapid increase in population and the fact that much of the land was held in great estates by the Crown, the nobility, the Church and men of wealth. For the past half century this landless group has been bringing increasing pressure to bear upon the various governments to break up the large estates and divide them among the peasants. Prior to the World War little was done to meet their demands, but since 1920 progress has been rapid.

This problem has been most acute in central and eastern Europe.

and in portions of the territory bordering the Mediterranean. Not all of these regions have solved the problem, as the power of the landholding groups has been great. Most progress has been made in the new states and those in which social and economic revolution has been most pronounced. Thus Poland, Czechoslovakia, Yugoslavia, the new Baltic States and Russia have broken up the majority of the great landed estates and turned the land over to the peasants.

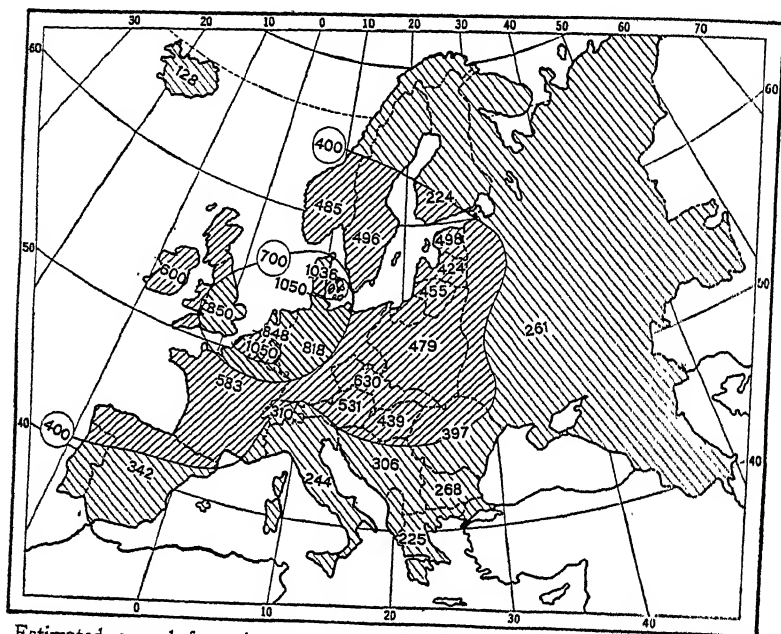
The result of this reform has been twofold. Politically it has tended to stabilize the state and eliminate an important element of unrest. Economically, however, it has frequently resulted in decreased production. In many cases the larger estates made use of machinery and fertilizers, which were beyond the means of the individual peasant, and were under the direction of managers trained in scientific agriculture. With proper care, and government aid in the form of education and the development of the cooperative movement, production should again reach, and possibly exceed, its former level. However, there is always the danger that division may continue to a point where the individual holdings become too small for economical cultivation. Where this happens, production will remain low.

This latter difficulty is emphasized by the fact that in many parts of the continent an important proportion of the tenant holdings are already very small. Poland provides an excellent example of such a situation. In that country 77 per cent of the landholdings are under 25 acres, and 35 per cent are under  $7\frac{1}{2}$  acres. Such small farms prohibit the use of machinery, the purchase of fertilizers, or proper crop rotation, and barely support their owners on a subsistence level. The problem of increasing the size of such holdings, either by consolidation or the addition of new lands, is even more difficult than the task of breaking up the large estates. This situation is widespread and must be dealt with if agricultural production and living standards are to be raised.

**Relation of the Home to the Land.**—The individual farmstead is unknown throughout most of Europe. The farmers dwell together in small agricultural villages located in the midst of their fields. While this system has the advantage of facilitating social intercourse, it has certain economic disadvantages. Often a large amount of time is lost in going from the village to the field. This condition is made more serious by the fact that the holdings of the individual farmer frequently consist of a number of isolated strips of land located in different directions from the village. These strips not only are too small for efficient cultivation, but their wide separation means an increased waste of time.

This condition exists over large areas, as is illustrated by the fact that it is receiving the serious attention of such widely separated governments as those of Switzerland and Bulgaria. It is probable that the village system will continue throughout most of Europe, but many of its evils can be eliminated by consolidating the individual holdings into one plot.

**The Relation of Agriculture to Industry.**—The eastern European countries produce a surplus of agricultural products but have to



Estimated annual farm income per man on the farm in Europe expressed in dollars, 1929. (Reprinted by permission from *Economic and Social Geography*, by Huntington, Williams and Van Valkenburg, published by John Wiley & Sons, Inc.)

import many manufactured goods, while western Europe produces an industrial surplus but is unable to meet its own demands for food. This condition has the advantage of fostering a lively trade between the two regions, but creates a decided difficulty if war or any other disturbance shuts off the normal channels of trade. This was well illustrated in the World War, when Germany tried to starve Great Britain into submission by its submarine campaign, while the Allies returned the compliment by attempting to surround Germany and cut off its food supply. On the other hand, Russia suffered because it was unable to secure munitions from the industrial west. Today such western European nations as Germany are attempting to encourage agriculture

through a system of tariffs and bounties, while nearly all the eastern European nations are attempting to foster industrial expansion by the same methods. The success of these efforts would result in the individual nations having well-rounded economic organizations, but it would do away with the benefits of geographical specialization, and would in many cases increase the cost of living.

One of the most notable population movements during the past century has been that from the farm to the industrial cities. This was possible in the west due to the rapid expansion of industry, and has there resulted in a benefit to agriculture. It has reduced the surplus farming population, and in some cases has made possible farm consolidation and more economical methods of cultivation. In the east, however, industry has not advanced to the point where it provides an outlet for any considerable portion of the surplus peasants. As a consequence, they have been forced to remain on the land and eke out a scanty living as tenants or as owners of tiny holdings. Such eastern states as Poland and Rumania are giving serious attention to this problem, and are considering the establishment of small-scale industries throughout the agricultural communities to provide employment for surplus labor, and to enable the small peasant to supplement his agricultural income by working in these industries for a portion of the year.

#### TRENDS IN EUROPEAN AGRICULTURE

During the present century changes have been taking place which have profoundly modified agricultural practices throughout large sections of Europe. A consideration of these changes is important, not only because it shows what has been and is taking place, but also because it gives some indication of the agricultural future of the continent.

**The Increasing Importance of Dairying.**—One of the most important trends in European agriculture within the past fifty years has been the increased attention given to dairying in the western and northern portions of the continent. As a result, forage crops and meadows have expanded at the expense of grain lands. This change has been due in part to the flooding of the western markets by cheap grains from eastern Europe and from overseas, and in part to the rapid rise of the industrial cities which form enormous markets for dairy products. From the British Isles to Finland this movement continues with

undiminished force, and seems likely to continue as long as the markets expand.

**Increased Agricultural Diversification.**—Eastern and southern Europe have long been characterized by one-crop agriculture. In some cases this has been due to limitations imposed by soil or climate, but in many others it has been caused by the lack of knowledge on the part of the farmers. Recent years have seen a gradual change in this situation, due to an increased knowledge of scientific agriculture on the part of the cultivators. This in turn has resulted from a gradual rise in the educational standards, and from the efforts of the governments to increase agricultural efficiency. This reform is only in its infancy, but it seems likely to gather momentum as time goes on, and should result in improved soil fertility and greater economic stability.

**Increased Agricultural Efficiency.**—All the peoples of Europe have been making decided efforts to improve their living standards. In the agricultural portions of the continent this has necessitated greater productivity and efficiency. Increased diversification has aided and will aid this movement. Other steps in the same direction have been improvements in the selection of seeds and in the breeds of livestock, more careful and scientific cultivation of the land, and an increased use of fertilizers and farm machinery. The latter reforms have been handicapped through the lack of capital, but nevertheless progress is being made. All of these improvements depend upon an increased knowledge and appreciation of scientific agriculture on the part of the farmers. The governments are aiding in this direction through raising the general educational standards, through the establishment of numerous agricultural schools and experiment stations, and through financial assistance in the purchase of machinery and fertilizers. The results of these efforts can be seen in an increased production per acre in almost all portions of the continent. If continued, they should result in decidedly raising the economic standards of the agricultural population.

## BIBLIOGRAPHY

### GENERAL ECONOMIC DEVELOPMENT OF EUROPE

- Day, C., *Economic Development of Modern Europe*, The Macmillan Company, New York, 1933.
- League of Nations, Economic and Financial Section, *Review of World Production 1925-1931*, Geneva, 1932.
- Pasvolsky, L., *Economic Nationalism of the Danubian States*, The Macmillan Company, New York, 1928.
- Patterson, E. M., "Europe in 1927, An Economic Survey," *Annals of the*

*American Academy of Political and Social Science*, 1927, vol. 134, pp. 1-124.

Patterson, E. M., "Western Europe and the United States," *Annals of the American Academy of Political and Social Science*, 1922, vol. 104, pp. 1-132.

Thompson, J. W., *Economic and Social History of Europe in the Later Middle Ages*, The Century Company, New York, 1931.

#### STATISTICAL MATERIAL ON EUROPE

*Economic Forces of the World*, Dresdner Bank, Berlin, 1930.

*Europa Year-Book*, Europa Publications, Ltd., London, 1926, published annually.

Farbman, M. (ed.), *Europa*, Europa Publications, Ltd., London, 1930.

League of Nations, Economic and Financial Section, *Statistical Yearbook*, 1928, and each succeeding year.

*Statistisches Jahrbuch für das Deutsche Reich*, Berlin, published annually.

U. S. Department of Commerce, *Commerce Yearbook*, vol. 2, Washington, published annually.

Winkler, W., *Statistisches handbuch der europäischen Nationalitäten*, W. Braumüller, Wein, 1931.

#### THE AGRICULTURE OF EUROPE

Andrews, F., "Handbook of Foreign Agricultural Statistics," *Bulletin No. 987*, U. S. Department of Agriculture, Washington, 1921.

Blanchard, W. O., "Distribution of Irrigated Areas with Special Reference to Europe," *Journal of Geography*, 1930, vol. 29, pp. 121-128.

Dore, V., *Oleaginous Products and Vegetable Oils—Production and Trade*, International Institute of Agriculture, Rome, 1923.

Durand, E. D., "Agriculture in Eastern Europe," *Quarterly Journal of Economics*, 1922, vol. 36, pp. 169-196.

Finch, F. C., and Baker, O. E., *Geography of World Agriculture*, U. S. Department of Agriculture, Washington, 1917.

International Institute of Agriculture, *Milk and Milk Products*, Rome, 1924.

——— *International Yearbook of Agricultural Statistics*, Rome, 1909-1921, and annually thereafter.

——— *International Review of Agriculture*, published monthly.

Jonasson, O., "Agricultural Regions of Europe," *Economic Geography*, 1926, vol. 1, pp. 277-314; vol. 2, pp. 19-48.

League of Nations, Economic and Financial Section, *The Agricultural Crisis*, Geneva, 1931, 2 vols.

Michael, L. J., "Agricultural Survey of Europe—The Danube Basin, Part I, Hungary, Austria and Czechoslovakia, Part II, Rumania, Bulgaria and Yugoslavia," *Technical Bulletin No. 126*, U. S. Department of Agriculture, Washington, 1924 and 1929.

Moriarty, D. G., "International Trade in Citrus Fruit," *Trade Promotion Series No. 77*, U. S. Department of Commerce, Washington, 1929.

*Wheat Studies*, Food Research Institute, Leland Stanford University, 1924 to 1932.

## EXPLOITATION OF NATURAL RESOURCES

EUROPE is well endowed with natural resources, which its active, energetic population have been quick to develop in such a way as to make them of maximum use. From the forests of the north, from the coal fields of Britain and the Ruhr, and from the iron mines of Lorraine and Sweden, vast streams of raw materials converge upon the great manufacturing centers and feed those industries which form such an important element of Europe's economic greatness. The variety and extent of these resources and their efficient exploitation have thus played an important part in the high living standards and advanced economic development of the continent.

## FORESTS

Man has long occupied Europe, and has accordingly cleared much land which was originally forested. Nevertheless, sufficient timber remains to enable Europe to occupy second place among the continents in the proportion of its area which is forested. These forests are of greater value than those of similar size in other portions of the world, because their location and character favor exploitation, and because the use of modern forestry methods results in a greater yield of wood per acre than in any other continent.

In northern Europe a great belt of virgin forests stretches from the Scandinavian Peninsula to the Urals, and causes Sweden, Finland and Russia to be more richly endowed with forest wealth than any other European nations. Exploitation has been increasing rapidly in this area, and today it is the principal timber-producing region of the continent. A forest area of secondary importance occupies the highlands of southern Germany, Austria, Czechoslovakia and Yugoslavia, and produces enough timber to satisfy the needs of these countries. Farther to the west forests occur wherever soil or relief renders conditions unsuitable for agriculture. The forests of central and western Europe may be classified as man made, in contrast to the natural forests

TABLE 27  
FOREST AREAS OF CONTINENTS<sup>1</sup>

Continent	Forest Area (million acres)	Ratio of Forest Area to World's Forest Area (per cent)	Ratio of Forest to Total Area of Continent (per cent)	Forest Area per 100 Inhabitants (acres)
Asia.....	2,096	28.0	21.6	240
South America....	2,093	28.0	44.0	3,245
North America....	1,444	19.3	26.8	998
Africa.....	797	10.6	10.7	560
Europe.....	774	10.3	31.1	170
Australia and Oce- ania.....	283	3.8	15.1	3,470
Total World..	7,487	100.0	22.5	435



Logs ready to be floated to the mill, Finland. (Courtesy of the Consulate General of Finland, New York.)

of the north. In these areas the forests are carefully thinned, trimmed and replanted, so that they present an orderly park-like appearance and are remarkably efficient producers. Poorly distributed rainfall, combined with long human habitation, causes the Mediterranean region

<sup>1</sup> Zon, R., and Sparhawk, William N., *Forest Resources of the World*, McGraw-Hill Book Company, Inc., 1923, vol. 1, p. 3.



to be deficient in timber, and necessitates large imports into such countries as Spain, Italy and Greece.

The abundant resources of Sweden, Finland and Russia have enabled these countries to become the leading European exporters of timber products. Sweden normally leads the world as an exporter of wood pulp, and all three export large amounts of rough and finished timber. Austria, Czechoslovakia, Yugoslavia, the new Baltic States and Norway likewise export some lumber products, but in none of these is the surplus sufficiently large to play an important part in world trade. France and Germany, due to the excellence of their forestry practices, are nearly self-supporting, but the other European countries have to import a portion of their requirements. With the use of modern methods of conservation and exploitation, the forests of Europe should con-

TABLE 28  
THE FOREST AREAS IN EUROPE<sup>1</sup>

Country	Forest Area (acres)	Ratio of For- est to Total Land Area (per cent)	Forest Area per 100 Inhabitants (acres)
Austria .....	7,600,000	37.7	120
Belgium .....	1,321,240	18.2	20
Bulgaria .....	7,515,420	28.0	140
Czechoslovakia .....	12,354,000	34.3	90
Denmark .....	872,000	8.2	30
Estonia .....	1,964,950	13.3	110
Finland .....	49,410,000	60.0	1,470
France .....	24,420,150	18.4	60
Alsace-Lorraine .....	1,088,270	30.3	60
Germany .....	30,905,840	23.8	50
Great Britain and Ireland .....	3,315,200	4.3	10
Greece .....	4,446,000	15.0	90
Hungary .....	3,148,000	14.0	40
Italy .....	14,252,000	18.1	40
Yugoslavia .....	17,258,000	25.2	120
Latvia .....	3,039,550	19.4	120
Lithuania .....	4,466,500	19.1	100
Luxembourg .....	197,600	30.9	70
Netherlands .....	644,480	8.0	10
Norway .....	17,037,570	21.4	650
Poland .....	21,881,140	22.8	90
Portugal .....	5,000,000	22.0	80
Rumania .....	21,758,000	27.8	120
Russia .....	440,000,000	38.7	440
European Caucasus .....	5,473,500	10.0	100
Spain .....	16,886,350	13.9	80
Sweden .....	55,550,000	54.8	960
Switzerland .....	2,320,000	22.7	60

<sup>1</sup> *Ibid.*, vol. I, p. 4.

tinue to satisfy the needs of the continent and produce some surplus for export.

### WATER POWER

Well distributed rainfall, combined with numerous lakes and snow-crowned mountains, causes Europe to be well endowed with water-power resources. Fortunately also, this power is most abundant in such areas as Scandinavia, the Alps and the Caucasus, where coal or other types of fuel are lacking.

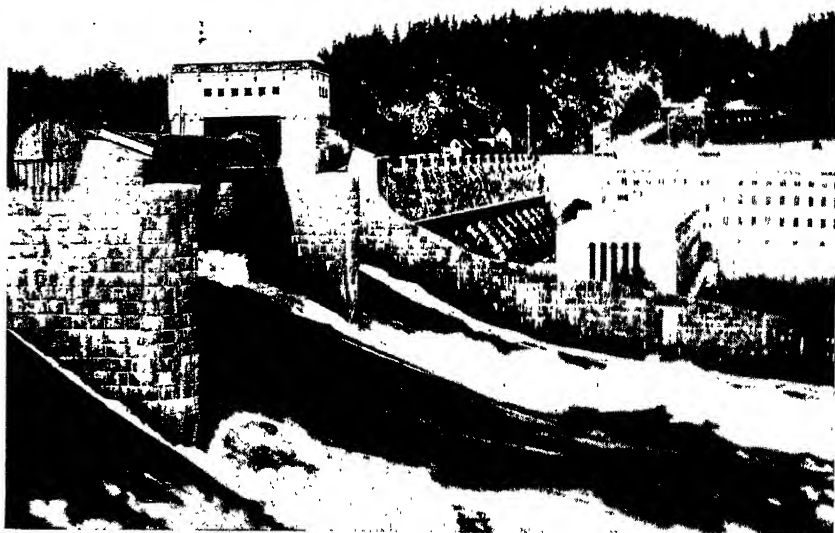
TABLE 29  
POTENTIAL WATER POWER OF THE CONTINENTS  
(U. S. Federal Power Commission)

Continent	Horsepower—potential
Africa.....	190,950,000
Asia.....	69,200,000
North America.....	65,800,000
Europe.....	58,094,000
South America.....	53,600,000
Oceania.....	16,650,000
Total World.....	454,294,000

TABLE 30  
POTENTIAL AND DEVELOPED WATER POWER IN  
REPRESENTATIVE EUROPEAN COUNTRIES, 1930  
(thousands of horsepower)  
(U. S. Department of Commerce)

Area	Potential	Developed
World.....	446,000	45,600
North America.....	68,550	21,825
United States.....	38,000	14,885
Europe.....	55,122	18,436
Norway.....	9,500	1,900
U. S. S. R.....	8,425	355
Sweden.....	5,000	1,675
France.....	5,400	2,300
Spain.....	4,000	1,000
Italy.....	3,800	4,840
Yugoslavia.....	3,000	212
Switzerland.....	2,500	2,300
Germany.....	2,000	2,000
Austria.....	1,660	700
Rumania.....	1,600	109
Poland.....	1,400	90
Bulgaria.....	1,200	50
Czechoslovakia.....	1,000	155
United Kingdom....	850	400

The development of water power has been especially rapid in many European countries since the World War, and at present Europe ranks second only to North America in the exploitation of this resource. Italy, France, Austria, Switzerland, Norway and Sweden are attempting to reduce coal imports by a rapid increase in the use of this source of power, and Russia has been harnessing its power as part of its Five Year Plan of industrial expansion. In some countries such as Italy, the



Water power is one of the greatest resources of the Scandinavian Peninsula. One of the power plants owned by the city of Oslo, Norway. (Courtesy of the Norwegian Government Railways.)

economic limit of such exploitation has been nearly reached, but in the majority there is still great possibility for future development.

### MINERALS

**Petroleum.**—To an increasing extent, man is moving in vehicles which use petroleum as a source of motive power. Automobiles and oil-burning ships have become essential means of transport for Europeans, as for the peoples of the other continents. Accordingly, every progressive nation has been seeking to discover and gain control of sources of this precious fuel. Unfortunately the nations of western Europe have had to look abroad for their supplies, as the reserves of this continent are less abundant than those of the two Americas and Asia, and

are principally found in the southeast rather than in the active west. This has resulted in a struggle between such maritime nations as Great Britain, Germany, France and Italy for the control of reserves in the less advanced portions of the world. Oil is thus playing an increasing part in diplomacy and international relations. Great Britain and France have been most successful in this quest, but most western European states have to depend upon purchases from America, Russia or their more fortunate rivals.

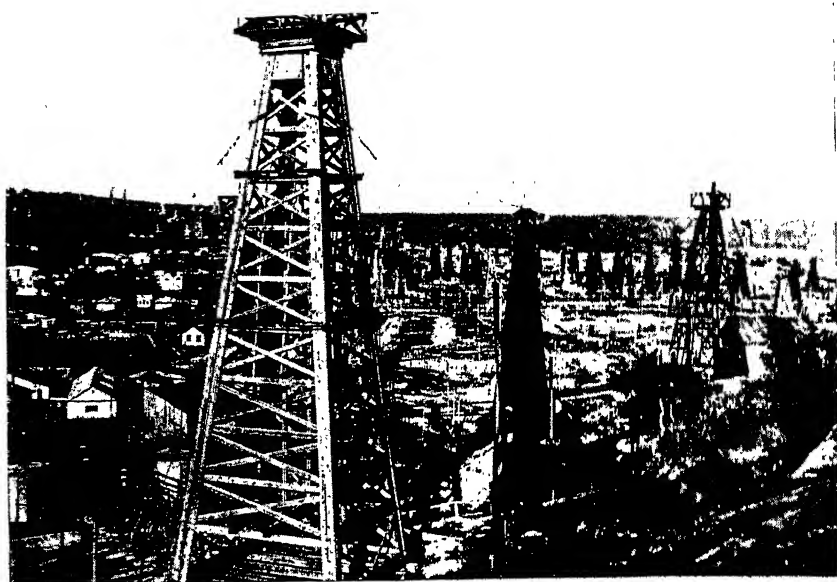
Russia, Rumania and Poland are the only three European nations having any important reserves of petroleum, although deposits of oil shale are quite widely scattered throughout the continent. Russia is rapidly increasing its production, and at present ranks second among the world's producers. Rumania is likewise expanding its production, while Poland is becoming of less importance. The production of these three states is sufficient to place Europe second among the continents, but it is insufficient to supply the petroleum demands of its peoples.

TABLE 31  
PETROLEUM PRODUCTION OF THE CONTINENTS AND PRINCIPAL  
EUROPEAN COUNTRIES  
(thousands of barrels)  
(U. S. Department of Commerce)

Area	1913	Average, 1926-1929	1931
World.....	385,345	1,292,492	1,370,299
North America.....	274,142	963,926	883,314
South America.....	2,706	121,296	168,490
Asia.....	20,040	86,035	93,660
Europe.....	84,207	117,287	213,840
Russia.....	62,834	83,032	161,900
Rumania.....	13,555	28,846	47,600
Poland.....	7,818	5,408	4,340

**Coal.**—Fortunately, Europe is well supplied with coal, which is so widely distributed as to be available to most centers of population. These reserves are of geographical importance, not only because they furnish the motive power for the greater portion of European industry, but also because they determine, to a large extent, the distribution of the great industrial centers of the continent. Where man digs for coal there arise great cities with gigantic factories and all the problems which develop when humanity is tightly wedged together in a small space.

Although Europe ranks but third in coal reserves, it is exploiting those reserves to a greater extent than any other continent, and it consequently holds first place in production. Within recent years it has mined approximately half of the world's supply of coal and the greater



An oil field in Wallachia. (Courtesy of the Rumanian Legation, Washington, D. C.)

part of the world's supply of lignite. The fact that nearly all of these fuels are consumed locally provides excellent evidence of the high degree of industrialization throughout the continent.

TABLE 32  
ESTIMATED COAL RESERVES OF THE CONTINENTS<sup>1</sup>  
(millions of metric tons)

Continent	Anthracite	Bituminous	Lignite	Total
North America.....	21,842	2,239,683	2,811,906	5,073,431
Asia.....	407,637	760,098	111,851	1,279,586
Europe.....	54,346	693,162	36,682	784,190
Australia.....	659	133,481	36,270	170,410
Africa.....	11,662	45,123	1,054	57,839
South America.....	700	31,397	.....	32,097
World Total.....	496,846	3,902,944	2,997,763	7,397,553

<sup>1</sup> Hoar, H. M., "The Coal Industry of the World," *Trade Promotion Series No. 105*, U. S. Department of Commerce, Washington, 1930.

Prior to the World War the European coal industry was in a prosperous condition, due principally to the fact that consumption was increasing steadily. The war interrupted this favorable situation. Productive capacity was increased, because many former importing nations were developing their own reserves to insure their industries an adequate supply of fuel in case of future emergencies. At the same time an increased use of such substitutes as oil and water power prevented any material increase in the demand for coal. As a consequence there developed a large surplus productive capacity which resulted in unemployment, idle equipment and keen competition for export markets.

The greater portion of European coal is to be found in a broad belt, following the southern edge of the European plain, and extending from Wales to the Donets Basin in the Ukraine. Although fields occur in other parts of the continent, it is from this belt that every major European producer draws its supply. Coal is the primary factor which has caused this region to support a chain of great industrial cities, and to be the most densely populated section of Europe.

To the west lies Great Britain, whose coal fields are sufficiently rich to place it first in production among the European nations, and to enable it to produce some 40 per cent of all the coal mined throughout the continent. Most of its fields lie on or very close to tidewater, and accordingly it is not surprising that this nation has become the world's leading coal exporter.

TABLE 33  
COAL EXPORTS OF THE LEADING EUROPEAN  
COUNTRIES

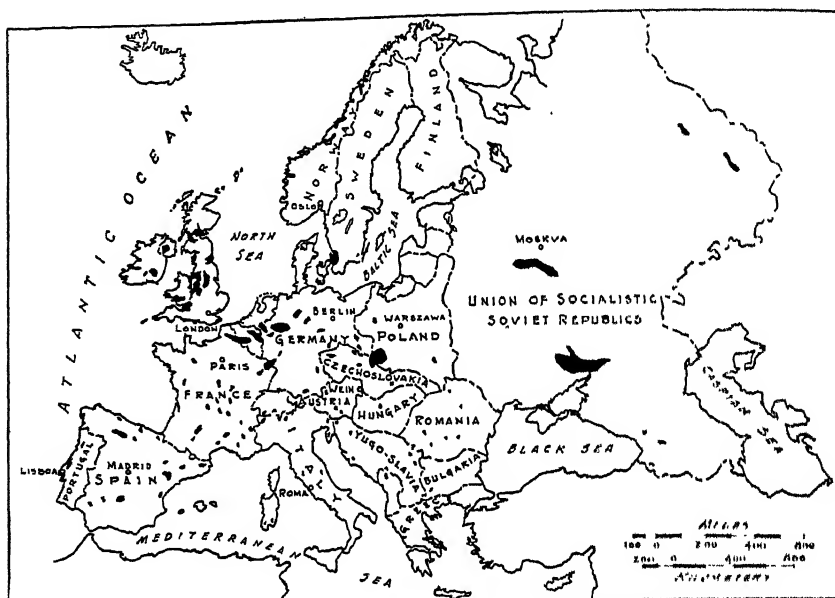
(thousands of metric tons)  
(U. S. Department of Commerce)

Country	1913	1930
United Kingdom.....	73,400	54,879
Germany.....	43,334	34,405
Poland.....		12,300
Russia.....		1,828

Across the Channel this belt continues in northern France, Belgium and The Netherlands. All these nations are important producers, but because of their high degree of industrialization, none of them mine sufficient coal to meet their own needs.

Farther to the east the belt passes through Germany, whose coal reserves are the greatest in Europe, but which ranks second to Great Britain in production and exports. In the latter respect it is handicapped

by the fact that most of its fields lie from one hundred to one hundred and fifty miles from the sea. In addition to its coal, this nation exploits its reserves of lignite to such an extent that it produces about three-quarters of the world's supply of this fuel. Around its coal fields have



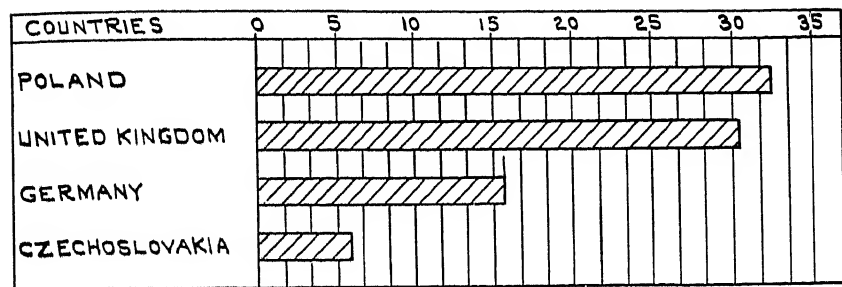
The coal fields of Europe. (U. S. Department of Commerce.)

grown up such mighty industrial centers as those of the Ruhr, Saxony and Silesia.

TABLE 34  
PRODUCTION OF LIGNITE  
(thousands of metric tons)  
(U. S. Department of Commerce)

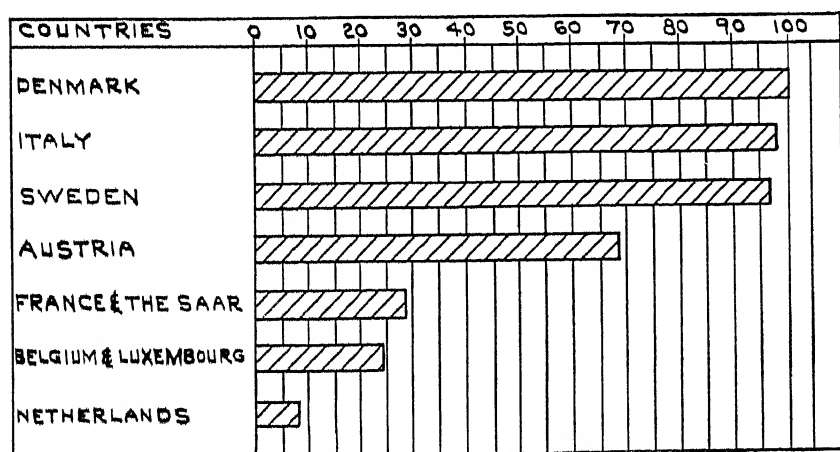
Country	1913	Average, 1926-1929 inclusive	1932
World.....	139,000	207,977	163,200
Europe.....		199,744	156,770
Germany.....	87,233	157,424	122,615
Czechoslovakia.....		20,211	15,910
Hungary.....		6,405	5,931
Yugoslavia.....		4,637	4,130
Austria.....		3,203	3,103

Silesia is the center of the next great producing region within this belt. The Silesian coal fields were divided following the World War. Poland received the lion's share, while the remainder went to Czechoslovakia and Germany. The Polish fields are sufficient to place that



Proportion of coal produced that is exported. (*Statistical Yearbook of the League of Nations, 1930-31.*)

nation fifth as a producer and third as an exporter. Here again exports are hampered by distance from the sea, for Polish producing centers lie nearly four hundred miles from tidewater. Czechoslovakia mines considerable amounts of coal, but is more important as a producer of lignite, ranking second to Germany in this respect.



Proportion of coal consumed that is imported. (*Statistical Yearbook of the League of Nations, 1930-31.*)

Russia, at the eastern end of the belt, has advanced rapidly in production within recent years, and by 1932 had climbed to third place among the European states. It has likewise shown a remarkable reversal of form as concerns exports and imports. Prior to the World



War it had a large import balance, but within recent years this has changed to a steadily growing export balance.

Spain is the only important producer lying outside of this major belt, although the Balkan States, Austria, Hungary, Italy, Sweden and Spitzbergen are steadily increasing the exploitation of their limited reserves. None of these nations, however, will become serious rivals of the belt states, and none are likely to develop the great industrial centers so characteristic of the latter.

TABLE 35  
COAL PRODUCTION OF THE PRINCIPAL EUROPEAN NATIONS  
(thousands of metric tons)  
(U. S. Department of Commerce)

Country	1913	Average, 1926-1929 inclusive	1932
World.....	1,203,300	1,255,000	955,050
Great Britain.....	292,044	221,422	212,602
Germany.....	190,109	153,299	104,740
France.....	40,844	52,071	40,268
Poland.....	.....	40,171	28,823
Russia.....	33,814	31,488	63,000
Belgium.....	22,842	26,830	21,414
Czechoslovakia.....	.....	14,876	11,053
Saar Basin.....	.....	13,491	10,438
The Netherlands.....	1,873	10,061	12,756
Spain.....	4,283	6,613	6,770
Bulgaria.....	358	1,385	.....

**Iron Ore.**—Europe is fortunate in having larger reserves of iron ore in proportion to its area than has any other continent. It is also fortunate in having the greater part of these reserves located close to coal deposits and within easy reach of transportation facilities and markets. The deposits of Sweden are the only ones of great importance situated at any considerable distance from fuel and markets, but the ore of this area is of such a high grade that it can be profitably transported to the great industrial centers.

Although Europe ranks second among the continents in iron reserves, it stands far in the lead in production, mining more than the rest of the world combined. While no portion of the continent is totally lacking in this metal, the largest and most actively exploited reserves border the coal which stretches from the United Kingdom to southern Russia. This section of Europe has thus been favored with an ideal

combination of coal and iron, and it is not surprising that it has developed into the industrial heart of the continent.

TABLE 36  
IRON RESERVES OF THE LEADING EUROPEAN COUNTRIES<sup>1</sup>  
(millions of metric tons)

Country	Known	Probable	Possible	Total	Per Cent
France.....	1,790.0	1,053.6	1,526.0	4,369.6	35.2
United Kingdom.....	317.5	464.3	1,472.3	2,254.1	18.2
Sweden.....	442.9	376.1	729.6	1,548.6	12.5
Germany.....	255.6	207.4	911.7	1,374.7	11.1
Russia.....	269.5	378.0	412.5	1,060.0	8.3
Spain.....	353.1	116.3	148.9	618.3	5.0
Norway.....	85.8	56.4	330.1	472.3	3.8
Czechoslovakia.....	22.3	84.8	58.6	165.7	1.3
Poland.....	11.2	50.6	69.2	131.0	1.1

France mines nearly as much iron as the rest of the continent combined, due to its control of the great Lorraine deposits. These contain relatively low-grade ore, averaging about 33 per cent iron, but because of their extent, accessibility and ease of mining, they are extensively developed. The low iron content of their ores favors the importation of coal, and to an increasing extent the iron is being smelted near the mines. Small deposits of high-grade ore are located in the southern and western portions of the country, but these are of slight importance as compared with those of Lorraine. The extent of the French reserves and the lack of sufficient domestic coal for smelting have favored exports, and France has become the greatest iron ore exporting nation in the world.

The production of iron ore in the United Kingdom has declined considerably since 1913. Nevertheless, this nation at present ranks second to France in both reserves and the amount mined. Production is not in proportion to reserves, due to the fact that a portion of these reserves are of such quality or are found in such small deposits that they are not being used. Consequently, although the country can supply its own needs in case of necessity, it normally imports about one-third of the ore used.

Swedish Lapland contains the largest reserves of rich magnetite ores in Europe. These average about 62 per cent iron, and form the most extensive deposits of such high quality to be found throughout the world. Within recent years these ores have been mined to an

<sup>1</sup>Roesler, M., "The Iron Ore Resources of Europe," *Bulletin 706*, United States Geological Survey, Washington, 1921.

TABLE 37  
 PRODUCTION OF IRON ORE  
 (thousands of metric tons)  
 (U. S. Department of Commerce)

Country	1913	Average, 1926-1930 inclusive	1931
France.....	21,918	48,636	38,526
United Kingdom.....	16,254	10,446	7,748
Sweden.....	7,476	9,100	7,071
Luxembourg.....	7,333	7,254	4,731
Germany.....	28,608	5,811	2,621
Spain.....	9,862	5,206	3,195
U. S. S. R.....	9,514	6,190	10,900
Austria.....	3,039	1,538	512
Czechoslovakia.....	.....	1,650	1,235
Italy.....	603	627	575
Poland.....	.....	547	288
Norway.....	545	518	575
Yugoslavia.....	.....	398	133
Hungary.....	2,059	187	81
Greece.....	.....	185	230
Rumania.....	.....	93	62

increasing extent, and at present Sweden nearly equals the United Kingdom in production. Unfortunately the country lacks coal, so that only small amounts of the ore are smelted locally. However, the high quality of the ore causes it to be in wide demand, and a large proportion of all that is mined is now exported. Germany is the greatest market for Swedish ores, but smaller amounts go to almost every important iron and steel center of Europe, and some even finds its way to the eastern United States.

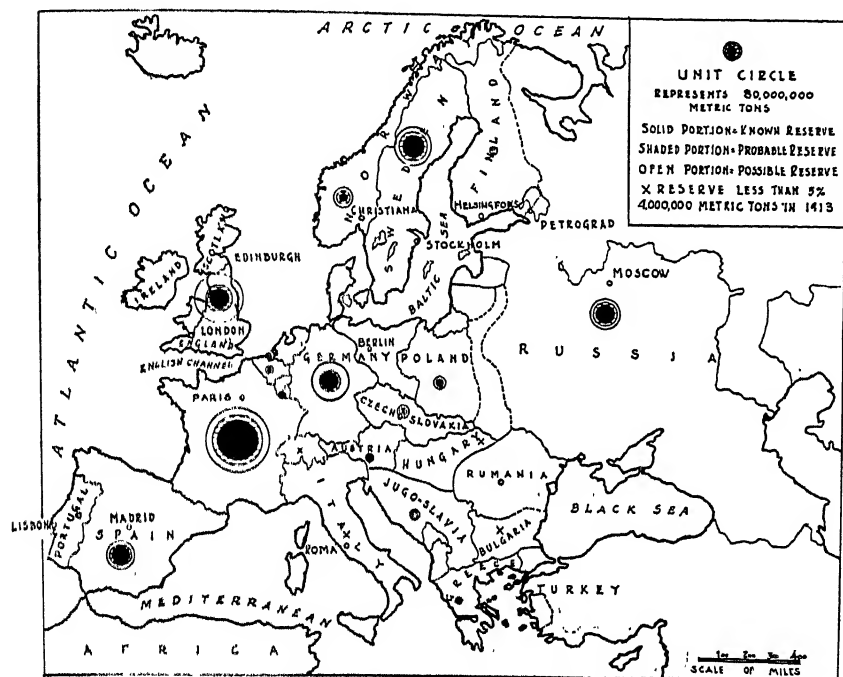
Within recent years Russia has increased its iron ore production with amazing rapidity, and in 1931 occupied second place among the European powers in this activity. This advance has been in response to the recent increase in industrial activity, and it seems likely to continue at a somewhat diminished rate in the future.

A small portion of the Lorraine deposits extends into Luxembourg, and enables that tiny country to hold fifth place in European iron ore production. However, its reserves are quite limited, and it seems doubtful whether this high rate of production can be continued for a very long period.

Germany lost the largest and most productive of its iron deposits with the loss of Lorraine following the World War. The remaining

reserves are widely scattered, and are barely sufficient to enable the country to occupy seventh position among the European producers. Consequently, at present its tremendous iron and steel industry has to depend largely upon ore imported from Sweden, France, Spain and northern Africa.

Spain has been producing large amounts of iron ore for a long period, and some of the more accessible deposits are nearing exhaus-



The iron ore reserves of Europe. (U. S. Geological Survey.)

tion. As a consequence, production has declined within recent years, and the country has dropped to sixth place among the European powers. It still contains considerable reserves, but the greater part of these are located in the interior, and as most Spanish ore is exported, they are not likely to be extensively developed.

Austria and Czechoslovakia also produce moderate amounts of ore, but their reserves are so limited that it seems doubtful whether their production will show any marked advance. No other European country produces as much as one million tons yearly, although small amounts are mined in such widely scattered areas as Italy, Poland, Norway, Yugoslavia and Greece.

**Copper.**—Due to the rapid growth of the electrical industry and the manufacture of such products as armaments and automobiles, Europe uses more copper than any other continent. Unfortunately its supply of this metal is limited, and imports are necessary from such favorably endowed areas as North and South America and Africa. As European reserves have been drawn upon for a long time, some are nearing exhaustion, and it seems probable that production will decrease rather than increase in the future.

TABLE 38  
PERCENTAGE OF WORLD PRODUCTION OF COPPER  
MINED IN EACH CONTINENT

Continent	1929	1931
North America.....	57.5	48.5
South America.....	19.6	19.5
Europe.....	9.6	12.9
Africa.....	8.1	11.6
Asia.....	4.5	6.5
Australia.....	.7	1.0
World.....	100.0	100.0

Only a few European countries mine any significant amounts of this metal. Spain, the leading producer, has been mining copper since the Phoenician period, and many of its best and most accessible deposits are nearing exhaustion. Germany, which until recently ranked second, is utilizing its reserves to capacity, and there seems to be little possibility of any increase in production. Russia and Yugoslavia are rapidly increasing in importance, and seem likely to continue to increase for some time to come. Nevertheless, it is probable that Europe will have to supply most of its demand for copper from outside sources.

TABLE 39  
COPPER CONTENT OF THE ORES MINED IN THE  
LEADING EUROPEAN COUNTRIES<sup>1</sup>

(thousands of metric tons)

Area	1926-1930	1931
World.....	1,653.0	1,401.0
United States.....	776.7	479.8
Europe.....	156.9	180.5
Spain.....	55.4	54.0
Russia.....	28.2	48.8
Germany.....	27.8	29.8
Yugoslavia.....	16.6	24.4
Norway.....	15.6	8.7

<sup>1</sup> *Statistical Yearbook of the League of Nations, 1932-33.*

**Lead.**—Although Europe ranks second to North America as a lead producer, it is unable to supply its own needs for this metal. Moreover, in the leading European nations the peak of production has passed, and the amount mined has been decreasing. The United Kingdom reached its maximum between 1850 and 1860, while Germany's peak was reached in 1890; and Spain mined the most just prior to the World War. Today Spain and Yugoslavia are the only nations consistently producing a surplus, although occasionally Italy is able to export a small amount. Yugoslavia, Poland and Russia seem likely to increase their production materially, but this increase will not be sufficient to make Europe independent.

TABLE 40  
LEAD CONTENT OF THE ORES MINED IN THE  
LEADING EUROPEAN COUNTRIES<sup>1</sup>  
(thousands of metric tons)

Area	1926-1930	1931
World.....	1,645.0	1,332.0
United States.....	580.3	367.1
Europe.....	286.2	295.3
Spain.....	119.4	100.7
Germany.....	50.7	54.3
Italy.....	29.2	24.6
United Kingdom.....	17.3	24.0
Yugoslavia.....	13.6	40.8
Poland.....	12.1	8.0

**Zinc.**—Europe ranks second among the continents in zinc production, but, as in the case of lead, it is usually unable to supply its own needs. Germany is the largest producer and, prior to the World War, dominated the world zinc market, partially through the use of large deposits in Upper Silesia and partially through the financial control of deposits in Australia. The loss of a large portion of Upper Silesia has so greatly reduced domestic production that at present the country mines scarcely enough to meet its own needs. Italy and Spain are the only countries which normally produce a surplus, although the reserves of Poland are ample for this if they were actively exploited.

**Bauxite.**—The rapid increase in the use of aluminum has made bauxite of major importance. Fortunately, Europe has large reserves of this ore, and is enabled to produce more than any other continent. France is the leading producer in Europe and in the world. It not only supplies its own demands, but has a considerable surplus for export. Italy, Hungary and Yugoslavia also mine more than they can use, although production in the latter two fluctuates violently. The major

<sup>1</sup> *Ibid.*

TABLE 41  
ZINC CONTENT OF THE ORES MINED IN THE  
LEADING EUROPEAN COUNTRIES<sup>1</sup>  
(thousands of metric tons)

Area	1926-1930	1931
World.....	1,578.0	1,140.0
United States.....	635.8	372.2
Europe.....	407.1	335.0
Germany.....	112.5	105.2
Poland.....	108.4	60.0
Italy.....	79.7	54.7
Spain.....	49.2	39.2
Sweden.....	23.9	29.2

portion of the surplus from these various exporting countries goes to Germany, which is Europe's leading producer of aluminum.

TABLE 42  
PRODUCTION OF BAUXITE ORE IN LEADING EUROPEAN COUNTRIES<sup>2</sup>  
(thousands of metric tons)

Country	1913	Average, 1926-1930 inclusive	1931
United States.....	213.6	362.7	199.0
France.....	309.0	614.9	401.2
Hungary.....	.....	232.0	89.6
Italy.....	7.0	140.4	67.4
Yugoslavia.....	.....	95.9	62.0

**Manganese.**—Europe leads the world in the production of this most essential of all ferro-alloys. This is largely due to the extent of the vast Russian deposits in Georgia and the lower Dnepr (Dnieper) Valley. If fully exploited, these alone would be sufficient to satisfy European demands. However, numerous other countries, such as Czechoslovakia, Rumania and Spain, produce ample quantities to meet their own needs.

**Other Metals.**—Europe holds a commanding position in the production of platinum and mercury. The former comes principally from the Ural Mountains of Russia, while the latter is mined chiefly in Italy and Spain. Unfortunately, the continent produces little gold or silver,

<sup>1</sup> *Ibid.*

<sup>2</sup> *Ibid.*

TABLE 43  
 PRODUCTION OF MANGANESE ORE IN EUROPEAN COUNTRIES<sup>1</sup>  
 (thousands of metric tons)

Country	1913	Average, 1926-1930 inclusive	1931
United States.....	4.1	53.9	39.9
Russia.....	1,245.3	1,059.0	1,568.0 <sup>a</sup>
Czechoslovakia.....	....	96.9	83.9
Spain.....	21.6	25.8	17.9
Rumania.....	....	23.7	18.8
Hungary.....	....	15.5	1.1
Sweden.....	4.0	14.2	8.4
Italy.....	1.6	10.9	6.4
Greece.....	....	3.6	0.3
France.....	7.7	3.5	2.1 <sup>a</sup>
Yugoslavia.....	....	2.1	2.5

<sup>a</sup> 1930.

and is almost entirely dependent upon outside sources for such metals as tin and nickel.

**Non-metallic Minerals.**—The industrial life of Europe is benefited by the existence of a wide variety of non-metallic minerals. For some, such as china clay, graphite, sulphur and gypsum, the continent can supply its own demands and produce some surplus for export, but for a few others, such as asbestos, it has to depend upon imports.

It has important quantities of but one of the three great mineral fertilizers, namely, potash. The vast deposits at Staszfurt and in Alsace enable Europe to produce the major part of the world's supply of this product. In spite of its lack of natural nitrates, it has to import very little, due to the production of synthetic nitrogen in such countries as Germany, the United Kingdom, Norway and France. It has also been able to supply its needs for phosphates by the production of super-phosphates in the leading iron and steel producing centers. The abundance of these three minerals, whether in a natural or artificial form, has been of tremendous benefit to European agriculture.

#### THE DISTRIBUTION OF MINERALS

The highlands of the Caledonian Fold and the lowlands of the European plain are poorly supplied with important minerals. The former contains only the iron ore of Sweden and the pyrites of Norway,

<sup>1</sup> *Ibid.*, 1931-32.



while the latter is notable chiefly for its lignite and clay. The minerals of these regions thus contribute little to the active and progressive populations which inhabit them.

The richest mineral portion of the continent lies along the southern edge of the European plain, where the young strata of that region meet the old rocks of the Armorican Fold. In this long belt extending from the British Isles to southern Russia, iron ore and excellent coal are found in close proximity, and it is little wonder that it has become the greatest mining and metallurgical district in the world. It has important minerals in addition to its iron and coal. The great potash deposits of Staszfurt, the rich lead and zinc ores of Silesia, and the manganese of the Dniepr Basin lie within its borders. It is truly a region destined by nature to become the industrial backbone of the continent.

South of this central belt a wide variety of minerals occur along the edges of the Armorican remnants and along the borders of the Alpine Fold. Here are to be found the bauxite of France and Hungary, and the pyrite, arsenic, china clay, iron ore and coal of central and southern France. Here also occur the graphite deposits of Czechoslovakia, Austria and Germany; the iron ore and magnesite of Austria and Slovakia, and the petroleum of Poland and Rumania. These and numerous other minerals are found in commercial quantities, and have favored the development of a wide variety of industries. However, the deposits are less concentrated, and iron and coal are less abundant than in the central belt. Consequently, this region lacks the high degree of industrialization and the great economic importance of its northern neighbor.

The mountains of the Alpine Fold contain few minerals, although around their base occur such valuable products as the manganese of Georgia and the mercury of northern Italy. The three great Mediterranean peninsulas to the south are blessed with an unusual variety of minerals. This is especially true of the Iberian Peninsula, which contains a greater variety of mineral wealth than any area of equal size on the continent. Spain is an important producer of iron and coal, and leads the continent in the mining of copper, lead and pyrite, while it ranks high in the production of zinc, mercury, manganese and antimony. Nearby Portugal is the continent's leading producer of tungsten. Italy is less well endowed with minerals than its neighboring peninsulas, and is especially handicapped by the lack of iron and coal. However, it leads all European countries in the production of sulphur and mercury, and is an important producer of bauxite, zinc, graphite and talc.

The Balkan Peninsula also contains a wide variety of minerals, but here exploitation has not taken place to the same extent as in its western neighbors. Greece furnishes important amounts of chromite, emery, iron ore, pyrites and magnesite, and small amounts of lignite and lead. Yugoslavia is more richly endowed than any other country of this peninsula. Its deposits of lead, copper, bauxite, iron and zinc are being exploited to an increasing extent, and production is steadily mounting. Unlike the more northern mineral-bearing areas, these regions have not developed industrially. Italy is the only exception to this, and even there the development has been recent. This lack of industrialization has led to the exportation to the northern markets of most of the minerals produced, and frequently to the exploitation of the mineral reserves by northern capital.

### THE INFLUENCE OF MINERALS

**Influence on the Importance and Type of Industries.**—The Industrial Revolution enormously enhanced the importance of such minerals as iron and coal. This in turn gave to the nations possessing these minerals decided advantages in economic competition. It did not change the portions of Europe within which manufacturing was important, but it did determine, and is determining, the relative position of the nations within the industrial areas, and the types of goods which they produce.

Prior to the introduction of the factory system, the situation was similar to that of today, in that the nations bordering the North Sea led in industrial activity. There was, however, much less difference between them than there is at present. France was the most populous and powerful of these states; England ranked second and was closely followed by The Netherlands. These three competed in trade, naval warfare and colonial expansion, and each manufactured some textiles, weapons and simple metal products. The peoples of each were likewise capable and energetic. Whatever differences existed in wealth and national strength depended primarily on differences in the amount and productivity of agricultural lands.

The rising importance of iron and coal enabled Britain to fashion a huge industrial organization. A thousand smoking furnaces turned out iron and steel, which innumerable factories fashioned into machines; and these in turn poured out a great stream of finished products which British ships carried to every corner of the world. These factories and furnaces were grouped together in vast industrial centers

which increased so rapidly in population that Britain eventually even surpassed France in this respect. Meanwhile, France, which was less well endowed with coal, industrialized slowly. Huge iron and steel mills and machinery factories were largely lacking, and instead numerous small shops arose where skill and artistic ability were used to produce high-quality products. These did not foster the rise of great industrial centers, nor were they sufficiently important to promote a rapid growth of population. The Netherlands, with no iron and little coal, followed still another course. This country long remained primarily agricultural and commercial, and what manufacturing did take place was concerned with the preparation of textiles and other agricultural raw materials. Until recently the population increased less rapidly than that of Britain, and great industrial centers were entirely lacking. However, during the present century The Netherlands have increased their production of coal with remarkable rapidity, and at the same time have changed from an agricultural and commercial state to one of the most highly industrialized nations of Europe.

While it is obvious that minerals were not alone responsible for the differences in the development of these three states, it seems certain that they did play a part in causing different degrees of industrialization and differences in the types of industrial products. Similar contrasts between Belgium and The Netherlands, or between Great Britain and Denmark, substantiate this point of view. Coal seems to be by far the most important mineral in bringing about these differences, although such countries as Switzerland, if provided with water power or other substitutes for coal, may become industrially important.

**Influence on Distribution of Population.**—As has been seen, coal and other important minerals serve as mighty magnets which tend to draw toward themselves many industries, and consequently many people. Thus great industrial cities arise which are usually the most densely populated and the most rapidly growing portions of the state within which they are found. Toward them the center of population tends to gravitate, and the distribution of population throughout the entire country is changed.

England provides an excellent example of this influence. Prior to the Industrial Revolution, the center of population in that country was in the southeastern agricultural area, frequently known as "Green England." With the rising importance of industry, the center of population shifted northward to the coal regions, to "Black England." In Germany no such shift took place, for the most fertile soils, and consequently the most thickly settled agricultural communities, happened to

occur in the same regions where the greatest coal fields were located. The rise of industrial cities simply made more pronounced the existing population centers. In both cases, however, the existence of minerals, especially coal, determined the location of the centers of population.

## BIBLIOGRAPHY

- Blanchard, W. O., "Europe and the Power Map," *Scientific Monthly*, 1929, vol. 28, pp. 62-66.
- Bogardus, J. F., "Notes on Recent Production and Movement of Coal in Europe," *Geographical Review*, 1930, vol. 20, pp. 642-651.
- Bradley, J. R., "Coal in Europe," *Trade Information Bulletin No. 489*, U. S. Department of Commerce, Washington, 1927.
- Curtis, H. A., and Ernst, F. A., "The Nitrogen Situation in European Countries, Nitrogen Survey, Part IV," *Trade Information Bulletin 270*, U. S. Department of Commerce, Washington, 1924.
- Dietrich, B. F. A., "European Forests and Their Utilization," *Economic Geography*, 1928, vol. 4, pp. 140-158.
- Eckel, E. C., *Coal, Iron and War*, Henry Holt & Co., Inc., New York, 1920.
- Furness, J. W., Jones, L. M., and Blumenthal, F. H., "Mineral Raw Materials," *Trade Promotion Series No. 76*, U. S. Department of Commerce, Washington, 1929.
- Hoar, H. M., "The Coal Industry of the World," *Trade Promotion Series No. 105*, U. S. Department of Commerce, Washington, 1930.
- Imperial Institute, "The Mineral Industry of the British Empire and Foreign Countries," *Statistical Summary, 1929-1931*, London, 1932.
- International Institute of Agriculture, *Forests and Forestry*, Rome, 1925.
- Killough, H. B., and Killough, L. W., *Raw Materials of Industrialism*, Thomas Y. Crowell Company, New York, 1929.
- League of Nations, Economic and Financial Section, International Economic Conference, *Memorandum on Coal*, Geneva, 1927.
- *The Problem of the Coal Industry*, Geneva, 1929.
- Economic Committee, *The Coal Problem*, Geneva, 1932.
- *The Timber Problem*, Geneva, 1932.
- Lieth, C. K., *World Minerals and World Politics*, McGraw-Hill Book Co., Inc., New York, 1931.
- Lippincott, I., *Economic Resources and Industries of the World*, D. Appleton-Century Co., Inc., New York, 1930.
- Mohme, F. S., "The Potash Industry of Europe," *Economic Geography*, 1929, vol. 5, pp. 141-148.
- Roesler, M., "The Iron Ore Resources of Europe," *Bulletin No. 706*, U. S. Geological Survey, Washington, 1927.
- Roush, G. A., *The Mineral Industry*, McGraw-Hill Book Co., Inc., New York (annual).
- Santmyers, R. M., "The Lead Industry, Part II, Europe, Asia and Africa," *Trade Information Bulletin No. 371*, U. S. Department of Commerce, Washington, 1925.

Spurr, J. E. (ed.), *Political and Commercial Geology and the World's Mineral Resources*, McGraw-Hill Book Co., Inc., New York, 1920.

*Transactions of the First World Power Conference*, London, 1921, Percy Lund Humphries & Co., Ltd., London, 1924.

*Transactions of the Fuel Conference (World Power Conference)*, Percy Lund Humphries & Co., Ltd., London, 1929.

Voskuil, W. H., *Minerals in Modern Industry*, John Wiley & Sons, Inc., New York, 1930.

*World Atlas of Commercial Geology*, Part I, *Distribution of Mineral Production*, Part II, *Water Power of the World*, U. S. Geological Survey, Washington, 1921.

Zon, R., and Sparhawk, William N., *Forest Resources of the World*, McGraw-Hill Book Co., Inc., New York, 1923.

## MANUFACTURING

THOUSANDS of European factories from Belfast to Perm are pouring out products unequalled in variety and amount by those of any other continent. European dominance in manufacturing is not surprising, for it was here that the modern factory system had its birth, and that many of the most important industrial inventions originated. Here also a capable population was favored with a wealth of minerals and other raw materials, and an excellent situation for trade. From Europe modern industry spread to other continents, some of which have advanced so rapidly that they are today contesting European leadership. Within the continent the growth of industry has profoundly modified the lives of a considerable proportion of the population. It has lessened the relative importance of agriculture, caused the growth of great cities, and added to the political and economic complexity of European life.

**The Distribution of Manufacturing.**—During the past few centuries the center of manufacturing has been in northwestern Europe, and especially in those territories bordering the North Sea. Here are to be found the great majority of the complex manufacturing, and even many of the simple, industries. Perhaps the best way of measuring the importance of this activity is by the proportion of the working population so employed. On this basis, there are seven European countries that are as highly or more highly industrialized than the United States. In order of industrialization, these are Switzerland, Belgium, England and Wales, Germany, The Netherlands, Czechoslovakia, and Austria. Slightly below this group come Sweden, France, Norway, Denmark, Italy, Portugal, Spain and Hungary. The other countries lag far behind, and industrialization reaches its lowest stage in Russia, Rumania, Bulgaria and Poland. Thus industrialization declines in all directions as one leaves the North Sea center. However, a gradual change is taking place in this situation. The increase of manufacturing in such countries as Italy, Russia, Rumania and Poland will eventually tend to bring about a greater equality between the various portions of the continent.



TABLE 44

GAINFULLY EMPLOYED POPULATION BY OCCUPATIONAL GROUPS, POST-WAR YEARS<sup>1</sup>  
(Percentage of each group to the total)

Country	Agriculture	Manufacturing	Mining Quarrying	Trade	Communication Transportation	Professions	Others
United States.....	26.3	30.8	2.6	10.2	7.4	5.2	17.5
Switzerland.....	25.9	44.1	.3	11.7	4.9	5.3	7.8
Scotland.....	10.1	40.2	7.1	10.7	8.3	4.4	19.3
Belgium.....	19.1	39.9	6.6	10.7	7.6	3.6	12.5
England and Wales.....	6.8	39.7	7.5	13.9	7.0	4.4	20.7
Germany.....	30.5	38.1	3.2	11.7	4.7	4.1	7.7
The Netherlands.....	23.6	36.1	1.7	11.7	9.6	6.5	10.8
Czechoslovakia.....	40.3	31.1	2.7	6.0	4.0	2.8	10.1
Austria.....	31.9	33.3 <sup>a</sup>	...	12.2 <sup>b</sup>	...	2.6	20.0
Sweden.....	40.7	30.2	.8	8.4	5.9	3.8	10.2
France.....	41.5	28.4	1.5	10.4	6.2	3.5	8.5
Norway.....	36.8	27.4	1.5	11.1	8.6	3.5	11.1
Denmark.....	34.8	27.0	...	10.8	5.9	5.5	16.0
Italy.....	56.1	24.0	.6	6.4	4.0	3.0	5.9
Portugal.....	57.5	21.5	.4	6.1	3.0	1.6	9.9
Spain.....	56.1	19.3	1.6	5.0	2.8	3.1	12.1
Hungary.....	58.2	18.6	1.1	5.0	3.2	...	13.9
Greece.....	53.7	15.7	0.2	7.6	3.9	3.1	15.8
Ireland.....	52.1	14.5	0.2	8.3	5.2	3.9	15.8
Estonia.....	65.6	13.0	0.4	3.4	2.5	2.1	13.0
Finland.....	68.0	12.8	...	3.3	2.7	1.7	10.6
Latvia.....	68.0	10.8	0.3	4.8	3.0	2.4	10.7
Poland.....	75.9	8.7	.7	3.8	1.8	1.6	7.5
Bulgaria.....	82.4	7.9	.2	2.7	1.3	1.7	3.8
Rumania.....	79.5	7.8	.2	2.7	1.8	1.3	6.7
Lithuania.....	79.4	6.2	...	2.4	0.9	0.9	10.2
Russia.....	86.7	6.1	6.1	1.4	1.6	2.3	2.0

<sup>a</sup> This figure includes also Mining and quarrying.

<sup>b</sup> Communication and transportation are also included in this figure.

facilities have all played their part in determining the industrial position of these countries. Those in which industries are not so highly developed will be found to be less well situated with respect to one or more of these factors. For example, Russia has a population which lacks experience in industrial activity and whose living standards are so low as to limit domestic markets; moreover, transportation facilities throughout the country are very inadequate. Italy, on the other hand, lacks industrial resources, and the climate in the southern part of the country is far from stimulating. Some of these factors can and will be

<sup>1</sup> Statistical Yearbook of the League of Nations, 1931-32.



improved by man, and some of the nations which are at present retarded will increase in industrial importance. But other factors such as climate and mineral resources will cause the industrial activity of various portions of the continent to differ permanently.

**Results of Industrial Activity.**—The most important change in European life brought about by the Industrial Revolution has been the rapid increase in population. This is evidenced by the fact that the population of the entire continent increased over 140 per cent between 1800 and 1930, which is far greater than the estimated rate of increase



A watch factory at St. Imier in the Swiss Jura. (Courtesy of the Swiss Federal Railroads.)

for the preceding centuries. However, the rate of increase in the highly industrialized states has been much greater than the average for the continent as a whole. Thus the population of England and Wales rose 350 per cent in the period first considered. The Netherlands present an example of a somewhat more complicated relationship between industrialization and population. There the rise of industries led to a rapid increase in population, which continued and made necessary additional industrialization in order to provide necessary employment. At present the relation between the density of population and manufacturing may be seen from the fact that the five most highly industrialized nations in Europe have an average population density of 474 per square mile,

while the five least industrialized states have an average density of 104 per square mile.

Another result of manufacturing has been to draw population together into large towns and cities. Thus within the limited territories of the famous Ruhr district of Germany there are only 14 cities with a population of over 100,000 each, while the tiny island of Great Britain has 55 cities of the same class. Not only are large cities most numerous in the industrial areas, but the great majority of the total population is urban. Thus 80 and 64 per cent, respectively, of the populations of the United Kingdom and Germany live in large towns or cities, while only 21 and 24 per cent respectively of the populations of such non-industrial states as Bulgaria and Poland are classified as urban.

**Major Problems of Manufacturing.**—Increased American competition and the difficulties involved in the present world economic situation have recently focused attention on some of the major problems of European industries. One of the most important of these is concerned with the small size of most of the European states. This limits domestic markets, and also limits the size of industries in so far as they depend upon such markets. Thus it is difficult for the industries of such countries as Switzerland and The Netherlands to compete with those of the United States, where the tremendous domestic markets permit the organization of huge industrial units. This has retarded standardization and mass production in Europe, while favoring them in the United States. This difficulty has recently been intensified by the erection of new tariff and other trade barriers. Thus the great industries and financial institutions of Austria have been compelled to curtail employment and activities since the empire was divided and the new states surrounded themselves by high tariff walls.

Increased production in minor European industrial areas and in other continents has created another group of problems by restricting exports. The increased production of Japan and India has resulted in a serious decline in the export of cotton yarns and fabrics from Great Britain and other western European areas. This in turn has been responsible for much unemployment and idle equipment. The increased industrial activity of Italy and Russia has had a like effect on the nations which formerly supplied them with those goods now produced at home.

The elimination of trade barriers and closer economic cooperation between the various European nations will do much to solve these problems. Such reforms will come slowly, but encouraging advances have already been made. The recent customs unions between Belgium

and The Netherlands, and between Latvia and Estonia are steps in this direction; and one of the most encouraging signs has been the discussion of the formation of an economic federation of Danube states.

The competition of other continents will doubtless continue to be a problem, and may result in a decline in the relative importance of European industry; but in spite of this, the many favorable physical and human factors which Europe possesses will continue to make it one of the leading producing centers of the world.

### THE IRON AND STEEL INDUSTRY

The manufacture of iron and steel is one of the largest and most basic of all European industries. From the mills and furnaces of the Ruhr, Lorraine, Birmingham and similar areas flow the raw materials for the major portion of the machines upon which modern European life is based. The economic and military strength of Germany, France and the United Kingdom rests in no small part upon their output of these products. Accordingly, this activity merits first, and perhaps major, emphasis in any survey of the industrial life of Europe.

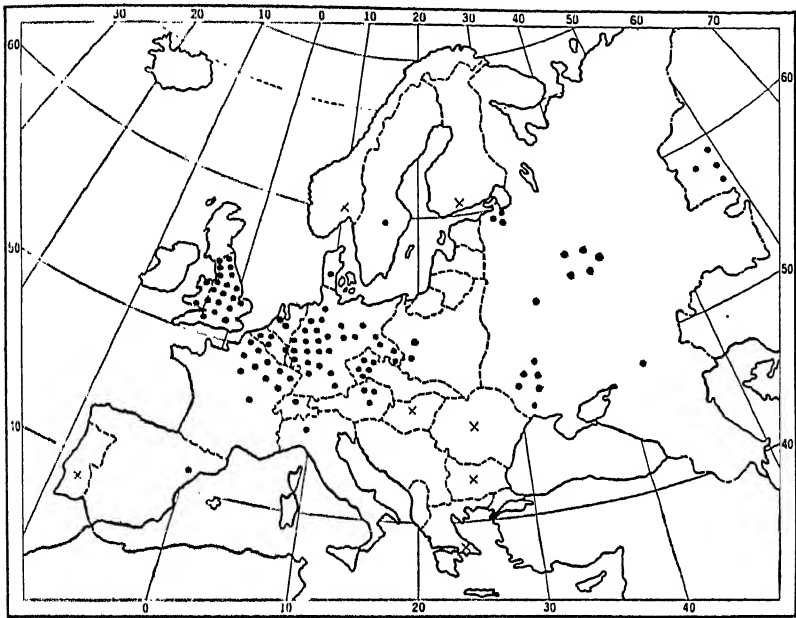
#### THE IMPORTANCE OF EUROPE IN IRON AND STEEL MANUFACTURING

Shortly after 1750 a series of improvements and inventions took place which made England a pioneer in the modern iron and steel industry. From that time Europe has been a leader in this activity, although within recent years its leadership has been actively challenged by North America. Thus by 1913 Europe was producing some 58 per cent of the pig iron and some 57 per cent of the steel manufactured throughout the world, thereby having a comfortable lead over North America in the production of both commodities. However, during and immediately after the World War American production increased rapidly, while the adjustments and disorganization incident to that struggle caused European production to decline sharply. These circumstances enabled North America to capture the lead and to hold it until 1927. By that time European recovery had advanced sufficiently to permit that continent to regain the leadership. In the five-year period 1926 to 1930, Europe produced 50 per cent of the world's pig iron and 49 per cent of the world's steel, while North America produced 46 and 48 per cent, respectively, of these two commodities. There seems to be little likelihood of a change in this situation in the immediate future, and accordingly

Europe will probably continue as the leading continent of the world in the manufacture of iron and steel.

#### LOCATION OF THE IRON AND STEEL INDUSTRY

The presence of large quantities of good coking coal seems to have been the factor most responsible for the concentration of the European iron and steel industry into three major units and one unit of secondary



Workers in metal and machine industries in Europe. Each dot represents 1 per cent of the European total. (Reprinted by permission from *Economic and Social Geography*, by Huntington, Williams and Van Valkenburg, published by John Wiley & Sons, Inc.)

importance. Scattered elements of the industry exist in other areas, but their production is relatively small. The three major units are, first, the United Kingdom; second, the area surrounding the iron fields of Lorraine, and including Belgium, Luxembourg, northern France, Lorraine, the Saar Basin and the Ruhr Valley; and third, Russia. The area of secondary importance includes the territories centering around Silesia, including German Upper Silesia, Polish Upper Silesia and the Czech Basin. In 1929 these three major areas and one secondary region furnished 94.4 per cent of Europe's pig iron and 91.4 per cent of its steel. The close relationship of this industry to coal can be seen from

the fact that these centers follow the line of the principal coal deposits from the United Kingdom through Belgium, northern France, Germany and Silesia, to southern Russia. Likewise, the importance of the manufacture of iron and steel to general industrialization can be seen from the fact that these regions form the principal industrial areas of Europe.

A consideration of the importance and characteristics of the industry within each of these centers will give an adequate picture of the industry for the continent as a whole.

TABLE 45  
PIG IRON PRODUCTION  
(thousands of long tons)  
(U. S. Department of Commerce)

Country	1913	Average, 1926-1930 inclusive	1931
World.....	77,714	85,136	55,313
United States.....	30,653	37,425	18,383
Germany.....	19,000	11,367	6,050
France.....	5,126	9,680	8,280
Great Britain.....	10,260	6,049	3,750
Belgium.....	2,445	3,647	3,215
U. S. S. R.....	4,563	3,503	4,700
Luxembourg.....	.....	2,639	2,050
Saar Territory.....	.....	1,844	1,525
Czechoslovakia.....	.....	1,375	1,200
Spain.....	418	610	500
Italy.....	420	566	535
Poland.....	.....	565	370
Sweden.....	730	475	430
Austria.....	2,344	401	150
Hungary.....	.....	274	175

**The United Kingdom.**—The United Kingdom was one of the first, and for a long time the most important, iron and steel producer in Europe or in the world. From the time of the Roman invasion Catalan forges were used to produce malleable iron. These depended upon charcoal for fuel, and resulted in such an exhaustion of the forests that by the middle of the eighteenth century production had almost ceased. Shortly after that, however, coke began to be used as a fuel, and after its use became general the progress of the industry was rapid.

During the period when charcoal was used as a fuel, furnaces were located principally with regard to iron deposits and forests. Water

power also was frequently an important item, as it was used to operate the bellows. The influence of the shift to coke as a fuel was to move the industry to the sections of the country where coal could be easily secured. The close relationship of iron and steel manufacturing to coal is illustrated by the fact that today every important coal-producing area in the United Kingdom is the site of an iron and steel industry.

Large supplies of excellent coal and considerable deposits of iron ore and limestone, available in almost every section of the country, provide all the raw materials essential for a large and successful industry.

Another factor which played no small part in the important position held by the British industry has been the number of inventions by British iron makers. The puddling furnace, the rolling mill, the Bessemer converter, the open-hearth furnace, the basic process and methods of producing crucible steel are but a few of the improvements in the iron and steel industry which originated in the United Kingdom.

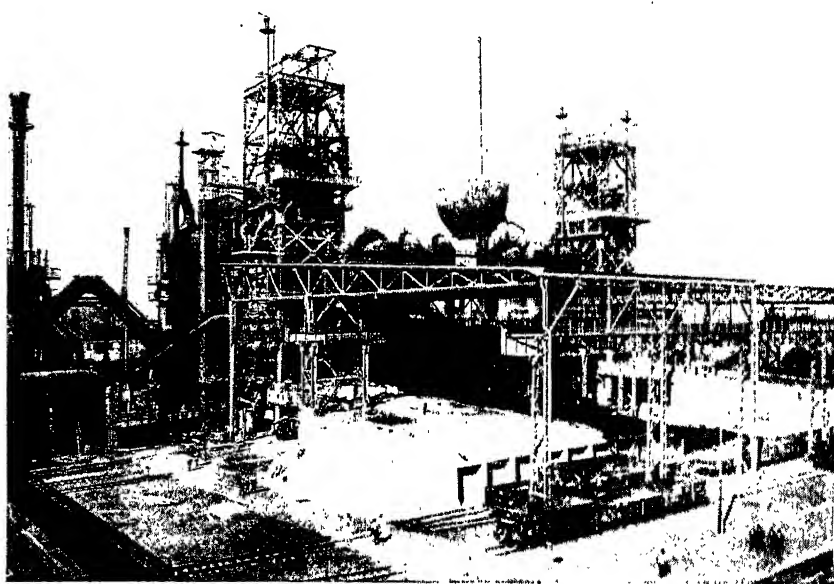
The United Kingdom led Europe in the production of pig iron until 1904, when it was passed by Germany, although Germany had exceeded it in steel production prior to that time. Recently France has also surpassed it in both activities, and if the present trend continues, it is possible that it may be overtaken by Russia. In 1931 the United Kingdom

TABLE 46  
PRODUCTION OF STEEL INGOTS AND CASTINGS  
(thousands of long tons)  
(U. S. Department of Commerce)

Country	1913	Average, 1926-1930 inclusive	1931
World.....	74,687	102,542	68,662
United States.....	31,301	48,217	25,597
Germany.....	18,632	14,013	8,380
France.....	4,614	8,917	7,850
Great Britain.....	7,664	7,640	5,300
U. S. S. R.....	4,181	4,343	5,000
Belgium.....	2,428	3,656	3,110
Luxembourg.....	.....	2,415	2,035
Saar Territory.....	.....	1,944	1,575
Italy.....	919	1,833	1,455
Czechoslovakia.....	.....	1,729	1,600
Poland.....	.....	1,194	1,145
Spain.....	238	782	700
Sweden.....	582	564	510
Austria.....	2,585	559	370
Hungary.....	.....	429	240

ranked third in Europe and fourth in the world in the production of steel while it ranked fourth in Europe in the production of pig iron.

**The Western Continental Center.**—The western continental region centers around the Lorraine ore fields, and includes the chief producing areas of Germany, France, Belgium, Luxembourg and the Saar Basin. It is one of the most important iron and steel producing regions in the world, being comparable with the section near or bordering the Great Lakes in the United States. Normally it produces some



Modern smelters in Essen-Borbeck on the Rhine-Herne Canal. (Courtesy of the German Tourist Information Office, New York.)

65 per cent of the iron and 60 per cent of the steel of Europe. Although it comprises portions of different nations, its various parts are normally interdependent, the iron ore of Luxembourg and Lorraine being exchanged for the coal of Belgium, the Saar and the Ruhr.

Modern methods of iron and steel manufacturing started later in this region than in the United Kingdom. It was slower to change from charcoal to coke, and the high phosphorus content of the ores prohibited the use of the original Bessemer converter for the manufacture of steel. It was not until the discovery of the Thomas or basic process in 1880 that these ores could be extensively used. Following that time the production of iron and steel increased with great rapidity, and this region soon assumed the leadership of Europe in these activities.

*The Ruhr.*—Blessed with the largest deposits of good coking coal in Europe, and favorably situated in close proximity to the Rhine and in the midst of the greatest market area of the continent, the Ruhr Valley contained the elements which naturally made it the most productive unit of this industrial area. In the past it was also benefited by its close contact with the Lorraine ore fields, to which it was linked by canals and railway. Due to its political separation from Lorraine following the World War, these contacts have been weakened, and most of the ore used now comes from Sweden, for water communication and the high quality of the ore make these imports profitable.

Prior to the World War the factories of the Ruhr were primarily concerned in turning out steel and finished products, as most of the pig iron was produced in the Lorraine furnaces. Since the war, however, many blast furnaces have been constructed in the Ruhr, and it is now much more important than formerly in the production of pig iron. The present well-rounded character of the iron and steel industry of this region is evidenced by the fact that in 1927 it produced 10,400,000 tons of pig iron, 13,000,000 tons of steel, and 10,000,000 tons of finished products, which are greater amounts in all cases than the entire production of France. Nevertheless, the real future of the area seems to lie in the production of steel and finished products, and it seems quite likely that pig iron production may decline.

*The Saar Basin.*—The past development of the Saar Basin closely resembles that of the Ruhr in that it was based on local supplies of coal, and was primarily concerned in the production of steel and finished products. Unfortunately, however, this coal was not suitable for coking if used alone, but was excellent if mixed with some of the rich Ruhr coal. Since the war the industry of this region has also changed, in that far more pig iron is being produced than formerly was the case. However, the limited reserves and poor quality of its coal will cause the Saar Basin to remain one of the minor units of the western continental area.

*Lorraine.*—The vast iron ore deposits of Lorraine have long made it an important producer of pig iron. Today it is responsible for some 80 per cent of the French output of this product, and seems destined to become the center of pig iron production in Europe. This is due to the fact that the ore is of such a low grade that it is more profitable to import the coal than to carry the ore to the coal fields. Since the World War there has been some increase in the production of steel in finished products. The absence of coal is, however, a special handicap



in these activities, and, as a consequence, Lorraine will probably remain primarily a producer of pig iron.

*Luxembourg.*—Luxembourg resembles Lorraine in that it contains a small section of the ore field underlying the latter, and that it contains no coal. It also was formerly engaged almost solely in the production of pig iron, but has recently increased its output of steel and finished products. While some progress in this direction will continue, the real future of the region would seem to lie in pig iron production.

*Northern France.*—The iron and steel industry of northern France is based on local coal supplies, an abundant and well-trained labor supply, and large available markets. It is principally concerned with the production of finished products and, to a less extent, of steel. These conditions have shown little change in the immediate past, and seem likely to continue.

*Belgium.*—The Belgian iron and steel industry is based on the same factors as that of northern France. Many of its mills and furnaces were destroyed during the World War, but they have since been reconstructed on a larger scale and in such a way as to provide for more efficient operation. As a result of these changes, the output of iron and steel increased nearly 100 per cent between 1913 and 1929. The continuation of this increase will of necessity depend upon an expansion of export markets.

*Exports.*—Over one-half of the world's exports of iron and steel come from this western continental region. Germany is normally the greatest exporter, and is followed by Belgium and France. It is probable that the future will see a decrease in the exports of iron and steel and an increase in the exports of finished products, as the present tendency is to turn into finished products an increasingly large proportion of the crude materials.

**The Central European District.**—The central European district centers around the coal fields of Upper Silesia and the former Duchy of Teschen. This region was formerly the second most important industrial area in Germany, and included the center of production in the Austro-Hungarian Empire. Today it is divided among Germany, Poland and Czechoslovakia, and the new national boundaries have retarded economic development by cutting off industrial areas from their sources of raw materials and markets. As a consequence, production is below the pre-war level in all portions of the district except those lying in Czechoslovakia. The region also lacks an adequate supply of iron ore, and the necessity of importing an increasing proportion of this product acts as a serious handicap. Present indications are that the

iron and steel production of this district will expand gradually as domestic markets and those of adjacent countries expand. The central district, however, will never become a serious rival of the two great centers of the west, and will probably lag considerably behind Russia.

**The Eastern Producing Region.**—The Russian or eastern producing region has increased rapidly in importance within recent years. It is still considerably behind the western continental center, but is gradually overtaking the United Kingdom, and may pass that country



Blast furnaces at Rykov. The Donets Basin is the center of the Russian iron and steel industry. (Courtesy of Sovfoto.)

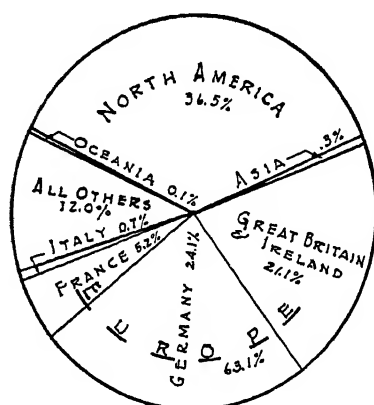
if the present trend continues. It may be subdivided into three districts: the Donets Basin, the central or Moskva section, and the Ural area. All of these have both iron ore and coal, and all are engaged in manufacturing iron and steel and finished products. The Donets Basin is and has been the leading producing center, but the Ural area is advancing rapidly and, with improvement in transportation facilities, may surpass its southern rival.

The future of the Russian iron and steel industry would seem to depend in large measure upon the domestic markets. There is no reason why Russia should not eventually supply its own needs for these products, but, on the other hand, there seems to be little probability that it will ever be an important iron and steel exporter. At present the local

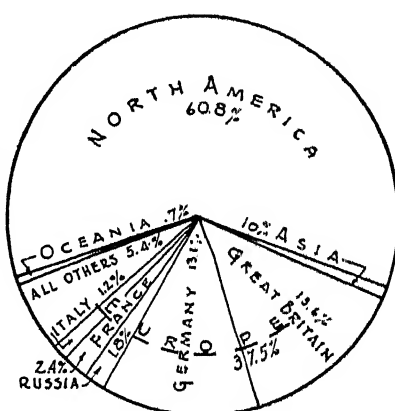
market is limited by the low per capita consumption, which amounted to only twenty-five pounds in 1925. The success of the present plans for industrialization would doubtless expand per capita consumption and lead to an increase in production.

### THE MANUFACTURE OF MACHINERY

The European production of machinery and other finished iron and steel products has tended to concentrate around the North Sea, due to the presence of such favorable factors as a large supply of highly skilled labor, abundant capital, excellent transportation facilities, large mar-



Exports of machinery, 1928. Percentage of world total. (Dresdner Bank, Berlin.)



Production of machinery, 1925. Percentage of world total. (International Economic Conference, 1927.)

kets, availability of iron and steel and accessibility to coal. The United Kingdom and Germany are the leading producers; in 1925 each country manufactured approximately 13.5 per cent of the world's output of machinery. France, which ranked third, produced only 2.5 per cent of the world's supply; while other nations which produced 1 per cent or more were Russia, Italy and Switzerland. The United Kingdom, Germany and France, combined, normally produce slightly over 70 per cent of the entire European production. These nations will doubtless retain their high relative position, as they are most favorably situated and equipped to carry on the industry.

Although Europe ranks but second among the continents in machinery production, it occupies first place in exports. The United Kingdom and Germany are the leading exporters, and combined they are

responsible for about half of the world's exports. However, in neither of these countries have exports attained their pre-war importance. The relative importance of these leaders may decline somewhat in the future, due to the rising exports of such countries as France, Switzerland, Sweden and Czechoslovakia. Nevertheless, skilled labor, abundant raw materials and a favorable situation for trade should keep the center of both production and exports in the North Sea area.

### THE MANUFACTURE OF ELECTRICAL EQUIPMENT

In nearly every European country there has recently been a rapid rise in the use of electricity. This in turn has led to a greater demand for and production of electrical equipment, and consequently a larger demand for iron, steel and copper. Today Europe and North America compete equally for leadership in this activity, and combined are responsible for the greater part of the world's output.

TABLE 47  
PRODUCTION OF ELECTRICAL EQUIPMENT, 1927  
(U. S. Department of Commerce)

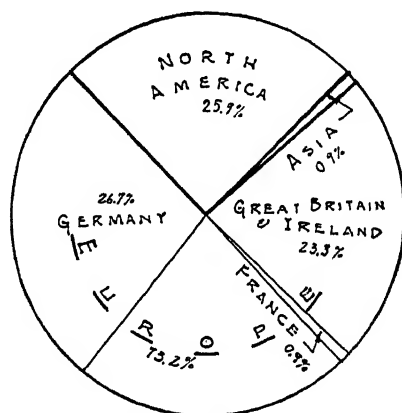
United States.....	\$1,636,726,000
Germany.....	642,600,000
Great Britain and Ireland.....	404,600,000
France.....	154,700,000
U. S. S. R.....	73,518,000
Italy.....	39,470,000
Sweden.....	31,368,000
The Netherlands.....	22,515,000
Denmark.....	10,401,000
Finland.....	1,261,000

Europe, however, leads all other continents in exports. Germany and the United Kingdom are the most active nations in this respect, and combined they furnish nearly half of the world's exports. France, Switzerland, Austria, Sweden and The Netherlands also provide some exports, while Italy and Russia produce considerable amounts of electrical equipment for domestic consumption.

### SHIPBUILDING

Abundant skilled labor, a plentiful supply of iron and steel, and a great demand for ships have aided the North Sea area to become the shipbuilding center of Europe and of the world. The nations surrounding this body of water construct nearly 80 per cent of the world's

shipping. Due to the tremendous demands of its merchant marine and navy and the location of its iron and coal near tidewater, the United Kingdom has become the chief producer in this region, and normally builds over one-half of the shipping of the world. Germany ranks second; and the speed with which it has reconstructed its merchant marine since the World War bears ample testimony to the activity of its shipyards. However, every North Sea country is engaged in this



Exports of electrical equipment; average, 1926-1930. Percentage of world total.  
(Dresdner Bank, Berlin.)

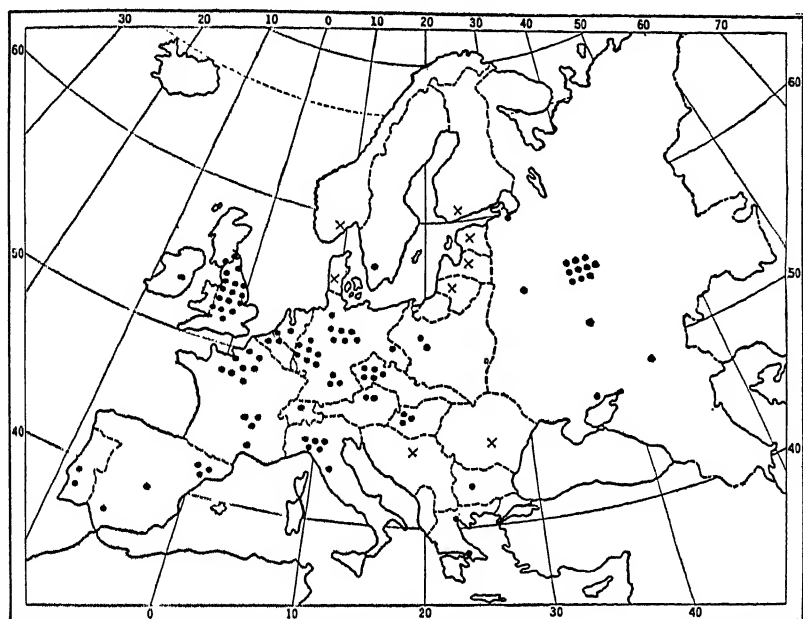
industry, Italy and Spain being the only nations outside of this area which are of any considerable importance. As long as the factors which have favored the North Sea region continue to operate, it will doubtless remain the shipbuilding center of the world.

TABLE 48  
MERCHANT VESSELS LAUNCHED  
(thousands of gross registered tons)  
(U. S. Department of Commerce)

Area	1910-1914	1926-1930	1931
World.....	2,739	2,468	1,617
United States.....	253	159	206
United Kingdom.....	1,660	1,263	502
Germany.....	329	268	84
The Netherlands.....	97	144	120
Italy.....	32	108	84
Denmark.....	41	106	126
Sweden.....	13	91	113
France.....	121	86	104

## TEXTILES

Europe holds a leading position in textile manufacturing. The mills of Lancashire, Yorkshire, Saxony, Belgium, Lyons and Milano turn out quantities of cotton, wool and rayon yarns and fabrics, sufficient to enable Europe to far surpass all other continents. Silk is the only one of the major textiles in which it occupies a secondary position. These industries are scattered widely throughout the continent, and



Workers in the textile industries of Europe. Each dot indicates 1 per cent of the European total. (Reprinted by permission from *Economic and Social Geography*, by Huntington, Williams and Van Valkenburg, published by John Wiley & Sons, Inc.)

vary in different regions in accordance with differences in demand, the character of the raw material available, and the skill of the population.

In this activity the North Sea areas again dominate, the United Kingdom, Germany and France being the leading individual nations. At present, the industry is tending to spread more widely throughout the continent, and such states as Italy and Russia are rapidly increasing their production.

**Cotton.**—In spite of the lack of raw materials, Europe manufactures more cotton than any other continent. If production is measured by the consumption of raw cotton, Europe is responsible for some 45

per cent of the yarn and fabrics produced throughout the world. The warm climate and low living standards cause cotton cloth to be in wide demand in the Mediterranean area, and it is used for a variety of purposes in nearly all portions of the continent. Accessibility to the cotton-producing regions of the United States, a moist climate, skilled labor and contacts with European and eastern markets have caused the United Kingdom to hold a leading position in this activity. This nation is tending more and more to capitalize on its skilled labor by specializing in high-grade fabrics. Germany and France both supply large domestic demands for cotton fabrics, and in addition export widely. Russia is rapidly expanding its cotton industry and is producing a considerable proportion of its own raw material. Nearly every other European nation manufactures some cotton; but Italy, Czechoslovakia, The Netherlands, Belgium, Switzerland and Austria are the only ones producing any considerable surplus for export.

TABLE 49  
COTTON MILL CONSUMPTION<sup>1</sup>  
(thousands of metric tons)

Area	1925-1930	1930
World.....	5,443	4,824
Asia.....	1,412	1,458
United States.....	1,475	1,195
Europe.....	2,312	1,562
United Kingdom.....	617	454
Russia.....	410	380
Germany.....	308	241
France.....	268	255
Italy.....	209	173
Czechoslovakia.....	108	89
Belgium.....	86	74
Poland.....	62	50
The Netherlands.....	41	43

**Wool.**—The United Kingdom, France, Germany, Italy and Russia are the leading nations in woolen manufacture. In this activity Europe again leads all other continents; in fact, its leadership here is even more pronounced than in cotton. The United Kingdom, France, Germany, Czechoslovakia and Italy are the leading exporters of woolen and worsted products. Various factors account for the location of this industry. In some cases it is the supply of raw materials, as in the United Kingdom and Italy. In others, such as Russia and portions of Germany, it is a cool climate which has given rise to a demand for

<sup>1</sup> *Review of World Production, 1925-1931*, League of Nations, Geneva, 1932.

woolen cloth; while in still others, such as France, style and the demand for high-grade woolen and worsted cloth for clothing have played a part.

TABLE 50  
CONSUMPTION OF RAW SILK<sup>1</sup>  
(percentage of world totals)

Area	Average, 1925-1928 inclusive	1928
France . . . . .	8.9	9.9
Germany . . . . .	3.7	3.7
Italy . . . . .	2.3	2.3
Switzerland . . . . .	2.2	2.0
Great Britain and Ireland . . .	1.0	1.2
America . . . . .	52.8	52.5
Asia . . . . .	26.7	24.7
Europe . . . . .	20.5	22.8
World . . . . .	100.0	100.0

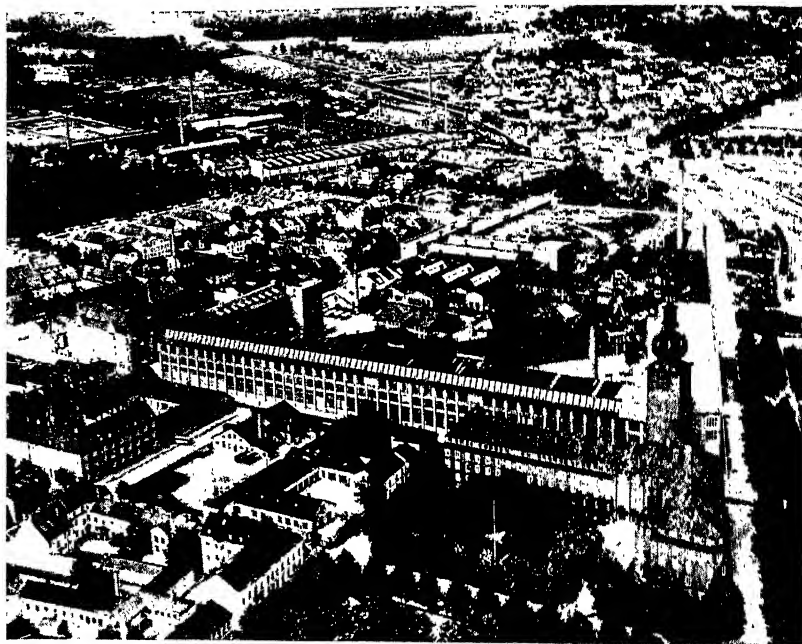
TABLE 51  
WORLD PRODUCTION AND CONSUMPTION OF RAYON, 1930  
(thousands of pounds)  
(U. S. Department of Commerce)

Area	Production	Estimated Consumption
Italy . . . . .	66,400	30,000
Germany . . . . .	50,300	59,000
Great Britain . . . . .	49,700	42,400
France . . . . .	41,600	23,000
Holland . . . . .	18,750	2,600
Belgium . . . . .	12,500	7,000
Switzerland . . . . .	10,650	5,250
Other Europe . . . . .	17,350	43,250
Total Europe . . . . .	267,250	212,500
United States . . . . .	119,000	105,000
Canada . . . . .	5,350	7,250
Total North America . . . . .	124,350	112,250
Asia . . . . .	35,100	53,200
South and Central America . . . . .	.....	5,400
Africa . . . . .	.....	1,900
Australia . . . . .	.....	3,250
World Total . . . . .	426,700	388,500

<sup>1</sup> *The Economic Forces of the World*, Dresdner Bank, Berlin, 1930.



**Silk.**—Silk manufacturing originally tended to locate around the raw silk producing areas of southern France and northern Italy, and even today it is most important in those sections. Recent years have seen some shift of the industry northward to those countries where high living standards create a large demand for silk fabrics. A portion of the industry is carried on by hand, and is concerned with the making of embroidery and similar goods. These activities are located in such mountain areas as Switzerland, and in regions of low living standards such as Italy.



The A. S. E. A. Electrical Works in Västerås, Sweden. (Courtesy of the Swedish-American Trade Journal, New York.)

**Rayon.**—Rayon is a textile of recent origin which is increasing rapidly in importance. It is a substitute for silk, and is much used in silk-manufacturing countries. However, its production is less localized than silk, and has tended to move northward toward the great producing centers of northwestern Europe, where the wood pulp and chemicals necessary for its production are available.

### CHEMICAL MANUFACTURING

Northwestern Europe was largely responsible for the development of the chemical industry, and has continued to hold an important posi-

tion in chemical production and exports. Its chemists have been world famous for their discoveries. It contains an abundance of raw materials and fuels; its high degree of industrialization opens many possibilities in the utilization of by-products and creates a demand for many chemicals, while the poverty of much of its soil makes chemical fertilizers essential if intensive cultivation is to be carried on. These various favorable factors have been most important in such nations as Germany, the United Kingdom and France, which have accordingly become the leaders in chemical production.

TABLE 52  
CHEMICAL EXPORTS<sup>1</sup>  
(percentage of world totals)

Area	Average, 1925-1927	1927
Germany.....	24.4	25.7
Great Britain.....	13.5	13.3
France.....	12.8	12.0
Italy.....	4.6	5.2
The Netherlands.....	3.6	3.8
Belgium.....	3.5	3.2
Switzerland.....	3.3	3.4
Europe.....	71.7	72.5
America.....	26.2	25.7
Asia.....	2.1	1.8
World.....	100.0	100.0

Germany was a pioneer in chemical manufacturing, and has consistently led all other European nations in this activity. The World War seriously retarded the German industry and led to the rise of rival producing centers in other parts of the world. While it is doubtful whether Germany will ever fully recover its pre-war position, it will undoubtedly continue as one of the leading chemical-producing nations of the continent. Its leadership in exports has never been successfully challenged, and, due to the abundance of raw materials and the activity of the German chemists, there seems to be little likelihood that it will lose its commanding position in this industry.

Great Britain and France rank next to Germany as producing and exporting centers. The former has recently declined somewhat in importance, although the decline would seem to be merely temporary. France, on the other hand, has been expanding its industry slowly but steadily.

<sup>1</sup> *The Economic Forces of the World*, Dr schner Bank, Berlin, 1930.

TABLE 53  
PRODUCTION OF NITROGEN<sup>1</sup>  
(percentage of world totals)

Area	1928
Germany.....	38.1
Great Britain.....	7.8
France.....	3.5
Poland.....	2.3
Italy.....	2.2
Belgium.....	1.3
The Netherlands.....	.5
Europe.....	59.1
America.....	38.8
Asia.....	2.9
Oceania.....	.2
World.....	100.0

TABLE 54  
PRODUCTION OF SULPHURIC ACID<sup>2</sup>  
(percentage of world totals)

Area	1928
Germany.....	12.9
France.....	10.8
Great Britain and Ireland.....	7.8
Italy.....	6.0
Belgium.....	5.1
Spain.....	1.7
U. S. S. R.....	1.7
Sweden.....	.9
Europe.....	54.4
America.....	40.1
Asia.....	3.8
Australia.....	1.7
World.....	100.0

Recently such smaller nations as The Netherlands, Belgium, Switzerland and Sweden have enlarged their chemical industries, and have exported considerable quantities of such products. All these nations possess certain advantages in the form of mineral raw materials or water power, and all are highly industrialized. Accordingly, it seems highly probable that they may become of even greater importance in the future.

<sup>1</sup> *Ibid.*

<sup>2</sup> *Ibid.*

## BIBLIOGRAPHY

- Blanchard, W. O., "Iron and Steel Industry of Europe," *Journal of Geography*, 1928, vol. 27, pp. 247-263.
- Dietz, F. C., *The Industrial Revolution*, Henry Holt & Co., Inc., New York, 1931.
- League of Nations, Economic and Financial Section, International Economic Conference, *Shipbuilding*, Geneva, 1927.
- *The Chemical Industry*, Geneva, 1927.
- *Electrical Industry*, Geneva, 1927.
- *The Iron and Steel Industry*, Geneva, 1927.
- *Mechanical Engineering*, Geneva, 1927, 2 vols.
- *Memorandum on Cotton*, Geneva, 1927.
- *The Natural Silk Industry*, Geneva, 1927.
- *The Artificial Silk Industry*, Geneva, 1927.
- Palmer, J. J. W., "The Continental Steel Entente," *Trade Information Bulletin No. 484*, U. S. Department of Commerce, Washington, 1927.

## TRANSPORTATION AND COMMERCE

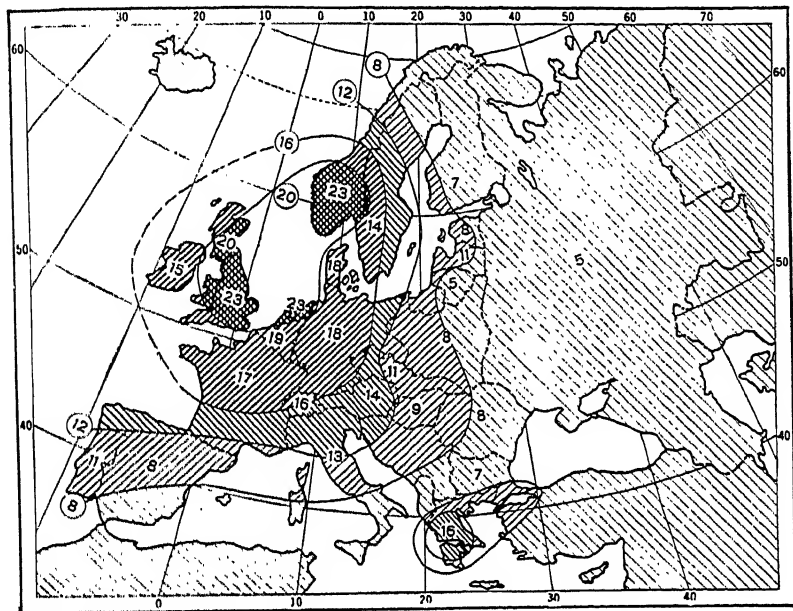
## TRANSPORTATION

THE thrifty Dutch farmer may stand on his doorstep and see on all sides evidences that he is surrounded by the most complete transportation system in the world. The canal which forms a portion of his dooryard carries a succession of tugs and barges bearing the products of a thousand similar farms to the neighboring city. In the distance he can see the masts and smokestacks of large ocean steamers, bearing a part of the freight which makes Rotterdam one of the leading European ports. On one delightfully shaded bank of the canal runs a well paved highway, over which passes a constant stream of autos, trucks, busses, bicycles and occasional farm carts. On the other bank efficient little locomotives puff and complain as they draw long strings of passenger or freight cars over their shining rails. Overhead roars a succession of airplanes carrying passengers and mail to Anvers, Paris or Berlin, or perhaps starting on their tremendous journey to the East Indies. He is and feels himself to be part of one mighty community, bound together by water, land and air routes into a cultural and economic unity.

How different is the landscape viewed by the Russian peasant in his tiny village near the base of the Urals. On all sides a vast featureless plain sweeps to the horizon. Across it in different directions run tracks of exposed earth which are generously called roads. In the rainy months he finds these impassable, for his cart sinks up to the hubs in the sticky mud, and even his horse can make little progress. In the winter, however, when he is relieved of work in the fields, he hitches his horse to the sleigh and goes easily over the snow-covered ground to visit relatives in a neighboring village. He has never even seen a railway, but his next-door neighbor is famous throughout the village because he once rode on one of those oft-imagined monsters known as trains. Water transportation is entirely outside the field of his experience. Once or twice an airplane has flown over the village and brought all work to a standstill, as our peasant and his friends viewed it with

open-mouthed amazement. Necessity thus limits his contacts to the people of his own and nearby villages. He has heard of those vast things called cities, but he lacks any adequate conception of them, and his knowledge of the outside world is the result of conversations with occasional travelers.

Such are the variations of transportation facilities in different portions of Europe, and such are some of their effects on man. In spite of these variations, Europeans are better served by all the modern



The percentage of European men engaged in trade and transportation. (Reprinted by permission from *Economic and Social Geography*, by Huntington, Williams and Van Valkenburg, published by John Wiley & Sons, Inc.)

agencies of transportation than the people of any other continent. Only in portions of Russia and the Mediterranean region has the lack of such facilities seriously retarded human progress.

**Railways.**—Europe, although less than half as large as North America, has four-fifths as many miles of railway. In spite of their slightly shorter mileage, European railways carry more passengers and freight than do those of their great western competitor. Moreover, only in the extreme south and east are there important communities which are situated more than twenty-five miles from a railway.

The North Sea countries are best served. Here railways touch nearly every community, and dozens of trains a day run between the more important cities. The predominant position of this area is shown

by the fact that it has 214.5 miles of railways per thousand square miles of territory, while the continent as a whole has but 93.14 miles. Moving out from this center in all directions, the facilities become less adequate, and reach their minimum density in Russia, Finland and Greece.

TABLE 55  
RAILWAYS—LENGTH OF LINE, 1930  
(U. S. Department of Commerce)

Country	Length of Line, Miles		
	Total	Per 10,000 Inhabitants	Per 1000 Square Miles
World.....	763,462	4.1	19.5
United States.....	260,440	20.9	88.9
Russia.....	50,269	3.1	6.1
France.....	39,725	9.5	186.7
Germany.....	33,466	5.2	184.9
Great Britain.....	20,403	4.6	216.5
Italy.....	12,653	3.3	114.0
Poland.....	12,179	3.8	81.2
Sweden.....	10,445	17.0	65.9
Spain.....	9,671	4.0	49.8
Rumania.....	6,917	3.8	60.7
Czechoslovakia.....	6,880	4.6	126.9
Yugoslavia.....	6,296	4.5	65.6
Hungary.....	5,390	6.2	150.2
Austria.....	4,157	6.2	128.4
Switzerland.....	3,354	8.2	210.4
Denmark.....	3,291	9.2	198.5
Finland.....	3,196	8.7	24.1
Irish Free State.....	3,027	10.3	113.8
Belgium.....	2,997	3.7	255.0
Norway.....	2,407	8.6	20.2
The Netherlands.....	2,285	2.8	172.9
Portugal.....	2,128	3.4	61.5
Bulgaria.....	1,825	3.0	45.8
Latvia.....	1,712	8.9	67.4
Greece.....	1,557	2.4	31.0
Estonia.....	1,180	10.5	64.3
Lithuania.....	1,056	4.4	49.1

The railway problems of Europe are somewhat different from those of the United States, due to the much greater importance of the short haul. The compact population of western and southern Europe, the difficulties involved in crossing national boundaries, and the small size of the continent itself, cause most rail traffic to move but short distances. This makes it practicable to use smaller cars and lighter equipment than are used in this country, and accounts for the fact that

Europe moves more freight and passengers than North America, in spite of its shorter total mileage.

The type of motive power used by the railways depends upon local resources. In such mountainous areas as Switzerland, Austria and the Scandinavian Peninsula electricity predominates, while throughout most of the rest of the continent coal drives the locomotives. However, in a few sections of southeastern Europe the presence of oil-burning engines bears testimony to the abundance of petroleum.

**Highways.**—Most sections of central and western Europe are well served by an excellent system of highways. In fact, this continent ranks first in mileage of improved roads, and has a greater total highway mileage in proportion to its area than any other continent. Even the mountainous districts are well provided with roads, which are frequently masterpieces of engineering skill. Only such eastern European nations as Poland and Russia are so poorly equipped with these facilities as seriously to hamper transportation.

TABLE 56

ROAD MILEAGE—CONTINENTS AND LEADING EUROPEAN COUNTRIES, 1930  
(U. S. Department of Commerce)

Area	Improved	Unimproved	Not Specified	Total
World.....	2,866,175	3,168,426	1,924,592	7,959,193
Africa.....	139,957	107,294	10,417	257,668
South America.....	83,208	123,228	90,144	296,580
Oceania.....	39,576	121,716	219,508	380,800
Asia.....	196,911	212,920	662,577	1,072,408
Europe.....	1,602,845	61,702	788,614	2,453,161
North America.....	803,678	2,541,566	153,332	3,498,576
U. S. S. R.....	430,265	.....	346,447	776,712
France.....	402,542	.....	2,486	405,028
Germany.....	204,927	.....	12,552	217,479
United Kingdom.....	.....	.....	179,286	179,286
Poland.....	140,029	.....	11	140,040
Italy.....	14,430	.....	99,699	114,129
Sweden.....	80,842	.....	184	81,026
Rumania.....	60,586	5,736	31	66,353
Spain.....	.....	.....	54,114	54,114
Irish Free State.....	45,722	.....	740	46,462
Czechoslovakia.....	44,009	.....	821	44,830
Hungary.....	16,698	17,485	2,864	37,047
Denmark.....	3,839	.....	27,864	31,703
Finland.....	18,984	.....	10,353	29,337
Lithuania.....	8,655	18,886	2	27,543
Norway.....	23,297	.....	46	23,343
Latvia.....	3,152	18,974	670	22,796
Belgium.....	2,257	.....	16,637	18,894



The Romans were the first great road builders of Europe, and many present highways in the southern and western portions of the continent date from the Roman period. As a consequence, the principal problem of much of Europe has been to improve existing roads rather than to construct new ones. A rapid increase in the use of automobiles provided the incentive for such improvement, and it has recently been proceeding rapidly.

**Motor Vehicles.**—The Europeans were quick to appreciate the value of automobiles, and despite such handicaps as the lack of fuels and the low purchasing power of much of the population, they have introduced them rapidly. Nevertheless, Europe still ranks far behind North America in the number of cars used. Again the North Sea countries hold a predominant position both in the total number of cars and in the number of persons per automobile. Cars are least numerous in countries with low standards of living, such as Russia, Greece and Yugoslavia.

TABLE 57  
AUTOMOBILES, 1930  
(U. S. Department of Commerce)

Country	Number of Automobiles	Persons per Automobile
United States.....	26,653,450	4.5
United Kingdom		
England.....	936,627	30
Scotland.....	112,463	41
Northern Ireland.....	23,491	51
Wales.....	57,845	36
France.....	1,296,167	31
Germany.....	642,500	99
Italy.....	241,463	173
Spain.....	172,277	130
Belgium.....	139,650	57
Sweden.....	136,827	45
The Netherlands.....	100,537	77
Denmark.....	100,625	35
Switzerland.....	71,916	56
Czechoslovakia.....	58,400	247
Norway.....	41,837	67
Irish Free State.....	37,404	79
Rumania.....	35,982	497
Poland.....	34,806	868
Austria.....	34,583	193
Finland.....	33,140	108
Portugal.....	28,580	205
U. S. S. R.....	24,000	6,125
Hungary.....	19,052	451
Greece.....	17,850	348
Yugoslavia.....	11,500	1,165
Luxembourg.....	8,607	33

Throughout many sections of Europe the motor bus is becoming a serious rival of the railways for local passenger traffic. Trucks are competing in the same way for freight traffic. This is creating a serious problem for the railways, except in countries such as England and France where many of the truck and bus lines are owned by the railways. These means of conveyance are most common in western Europe, but their use is spreading to all parts of the continent.

Because of its low fuel cost, the motorcycle is very popular throughout those sections of Europe which are blessed with good roads. Bicycles are also extensively used in such level areas as The Netherlands, and a surprising number are to be found even in such mountainous countries as Austria and Switzerland.

**Airways.**—Europeans were pioneers in the development of commercial air routes. These were at first local and only connected cities within the same country, but they were later expanded to take in neighboring states, and today connect Europe with such distant areas as Java, Siberia and South America.

Germany was one of the first countries to experiment in this form of transportation, and today it has the most air lines and the most highly developed system of air travel of any of the larger countries. Belgium and The Netherlands hold a leading position among the smaller powers, and have a remarkable length of air lines, considering their small size.

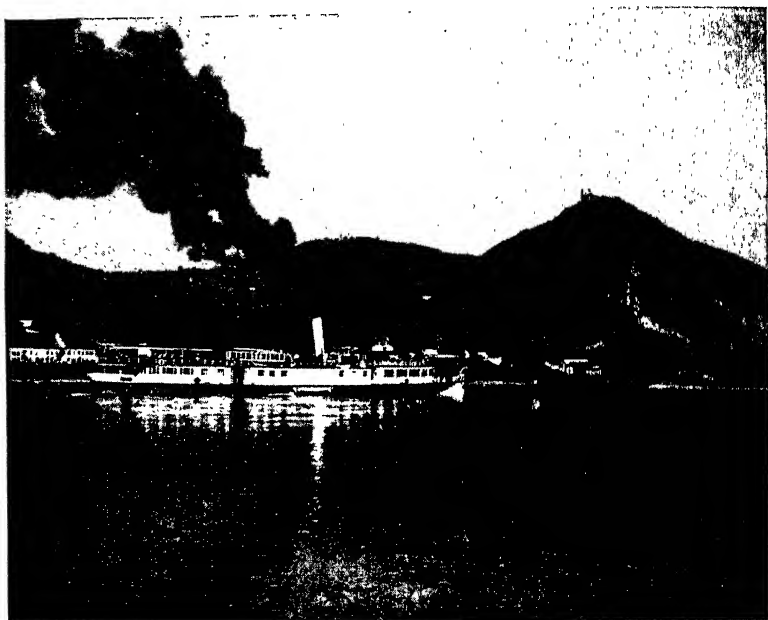
For the most part, air routes follow the normal lines of travel between the larger population centers. The exact course is controlled much less by topography than is the case with land and water routes. However, winds and storms exercise a decided influence over their location. In sections of eastern Europe—for example, in the Caucasus—air routes are being established for both military and commercial purposes, to open up territory which was otherwise nearly inaccessible.

#### INLAND WATER TRANSPORTATION

**Rivers.**—Europe has excellent facilities for inland water transportation. In the western part of the continent a network of rivers radiates from a common center in the Alps. Many, such as the Elbe, the Rhine and the Seine, lead to the North Sea; the Oder and the Wista flow toward the Baltic, and the Danube and the Dnestr empty into the Black Sea. Still others, such as the Rhône and the northern Italian rivers, lead to the Mediterranean. The close association of their headwaters has made it possible to connect many of them by canals, and

thus provide water routes between all the bordering seas. The north-flowing rivers have their lower courses in the European plain, and the distances between them are so short that it has been possible to connect their tributaries by a remarkably complete system of canals.

Eastern Europe has a similar hydrographic center in the low Valdai Hills. From here such rivers as the Volga, the Dnepr, the Dvina and the Severnaya Dvina lead to the Caspian, the Black Sea, the White Sea and the Baltic. Here again connection by canal is frequently easy, and transportation is facilitated in all directions. There



The Danube above Wien. (Courtesy of the Austrian Tourist Information Office, New York.)

is thus no portion of Europe not well served by waterways, and no conceivable direction in which freight may not be shipped by water.

As the general movement of European commerce is toward the North Sea, the navigable rivers flowing in that direction are most used for transportation. The Rhine, the Elbe, the Seine and the Thames are thus among the most important commerce carriers in Europe or the world. The rivers flowing into the Baltic reflect the declining relative importance of that sea by carrying but little freight. They also labor under the handicap of being closed by ice for considerable periods each winter. Through navigation on such Mediterranean rivers as the Rhône and the Po is hindered by their extensive deltas, although they

carry some local commerce. On the other hand, such eastward-flowing rivers as the Danube have the disadvantage of running counter to the normal channels of trade, and consequently carry little through commerce, although local trade is important. In spite of the fact that it empties into the landlocked Caspian, the Volga is the most used river of Russia. It has the advantage of flowing through a land insufficiently provided with other means of transportation, and of being bordered by numerous towns and cities. The Dnepr and the Don connect the industrial and agricultural areas of the Ukraine with the Black Sea,



The Saima Canal in Finland. (Courtesy of the Consulate General of Finland, New York.)

and are thus important commerce carriers. The north-flowing rivers of Russia are rendered of slight importance by climate and by the fact that they empty into the little-used Arctic Ocean.

**Canals.**—European canals were much used as avenues of trade before the coming of the railways. Today, although they hold a relatively less important position than formerly, they are still extensively used, and are being increased in length and size.

In northwestern Europe their principal function is to connect the numerous river systems. Germany has some 1400 miles of canals which connect the more important rivers flowing into the North Sea and the Baltic, and link the Rhine with the Danube. France also has

an extensive canal system connecting and supplementing its rivers. The low delta territory of The Netherlands has the most complete network of drainage and commercial canals in Europe, and Belgium is also fortunate in having an extensive system. In northern Europe, Sweden and Finland use canals to connect their numerous glacial lakes. Russia also has a few that have been in use for a considerable period. In the Mediterranean region few canals are to be found, except in the Po Basin in Italy.

Ship canals have played a valuable part in increasing or maintaining the importance of several European ports. The North Sea Canal has maintained the importance of the port of Amsterdam, despite the fact that the large ships have been unable to use the Zuyder Zee. The Manchester Ship Canal has transformed that interior city into an ocean port. The Corinth Ship Canal is limited because of its narrowness and the speed of the current, but has contributed much to the maritime importance of that port. The Kiel Canal across the Schleswig peninsula was constructed primarily for military purposes, and proved most valuable to Germany during the World War.

#### OCEAN SHIPPING

Europe holds undisputed leadership among the continents in ocean shipping. The United States and Japan are the only non-European nations with important merchant marines. This leadership has been

TABLE 58  
MERCHANT MARINE OF THE LEADING NATIONS, 1931<sup>1</sup>  
(thousands of gross tons)

Country	Tonnage	Percentage of World Totals
World.....	70,131	100.0
United Kingdom.....	20,303	29.0
United States.....	13,544	19.2
Japan.....	4,276	6.1
Germany.....	4,255	6.0
Norway.....	4,066	5.7
France.....	3,566	5.1
Italy.....	3,336	4.7
The Netherlands.....	3,118	4.4
Sweden.....	1,705	2.4
Greece.....	1,398	2.0
Spain.....	1,227	1.7
Denmark.....	1,145	1.6
Russia.....	604	.8
Belgium.....	547	.7

<sup>1</sup>*Statistical Yearbook of the League of Nations, 1931-32.*

partially due to such physical factors as the numerous bordering and penetrating seas, the many harbors, few of which are handicapped by ice, and the situation of Europe with respect to other land masses. The activity of the European peoples has also played a part. They have established an extensive trade between themselves and with other continents, and have thus created a demand for shipping to carry that trade. Their inventiveness has also led to many improvements in shipping, and has thus been partially responsible for European leadership. These factors continue to operate, and thus there seems to be little likelihood that Europe will be displaced from its commanding position.

## SEAPORTS

The tremendous water-borne trade of Europe has given rise to many great ports. These are to be found on every bordering body of water, but the largest are located around the borders of the North Sea. Here economic life is most active, and here also the submerged river valleys provide many fine harbors. London, Anvers, Hamburg, Rotterdam and Bremen are the most important of these ports, and rank among the leading ports of the world. The ports of the Baltic are somewhat less active; nevertheless, those of Köbenhavn (Copenhagen), Stockholm, Leningrad and Gdynia carry on considerable trade. In the

TABLE 59  
VESSEL ENTRANCES AT THE LEADING  
EUROPEAN PORTS<sup>a</sup>  
(thousands of net registered tons)  
(U. S. Department of Commerce)

Port	Average 1928-1930
New York.....	30,330 <sup>b</sup>
London.....	28,629
Hamburg.....	21,898
Rotterdam.....	20,916
Anvers (Antwerp).....	20,227 <sup>b</sup>
Liverpool.....	16,818
Marseille.....	14,545
Southampton.....	12,563
Cherbourg.....	11,566
Newcastle-on-Tyne.....	10,860
Genova (Genoa).....	10,348
Napoli.....	9,979
Le Havre.....	9,330

<sup>a</sup> Includes only seagoing vessels in foreign and coast-wise trades, except where otherwise noted.

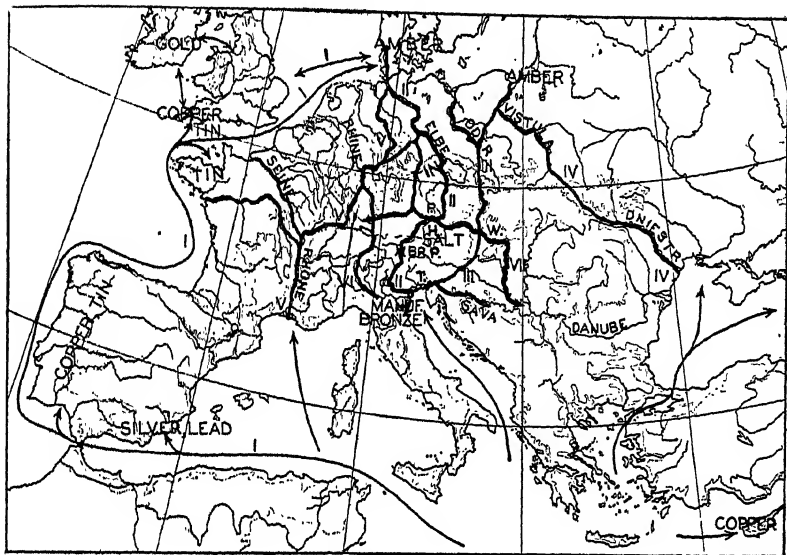
<sup>b</sup> Foreign trade only.

Mediterranean the ports of Genova (Genoa), Marseille and Napoli (Naples) are the most important, but hundreds of others have engaged in commercial activities since the Carthaginians established their numerous trade routes. Arkhangelsk (Archangel) is the only important port on the White Sea, and in spite of limitations imposed by climate and isolation, it is actively engaged in the lumber trade. Murmansk is the leading port on the Arctic Ocean, but its location far from the more active portions of Russia causes it to be of slight importance.

#### EUROPEAN TRADE ROUTES

**The History of European Trade Routes.**—Long before the dawn of recorded history, European man sought to supply a portion of his needs by tapping sources of supply beyond the confines of his local community. At first he sought such essentials as salt, but as his cultural and economic standards rose he searched for articles of beauty or adornment. He thus brought amber from the Baltic to the shores of the Black Sea and the Adriatic, and established the first major trade routes of the continent. This early trade consisted largely in the transfer of articles from tribe to tribe until they reached their final destination. Soon, however, commercial groups arose who devoted themselves almost solely to trade. Among the earliest of such groups were the Phœnicians and the Greeks. They not only expanded the land routes but explored the seaways, and built up an active maritime trade with all portions of the Mediterranean. Not satisfied with the limitations of this area, they explored the shores of western Europe until they found the tin of Britain and the copper of Spain. At the same time they were developing commerce with the older civilizations of the east. Phœnicia was excellently situated to tap the trade of Babylon and Assyria, and both the Phœnicians and the Greeks established settlements on the Nile delta in order to carry on trade with Egypt. Beyond beckoned the fabulous wealth of India, which might be reached through the Mesopotamian lowland and the Persian Gulf or by way of the Isthmus of Suez and the Red Sea. A profitable trade in oriental luxuries developed over both of these routes, and added materially to the wealth of the commercial states.

Carthage and Roma fell heirs to the trade of Greece and Phœnicia, and for a long time they dominated the commerce of the European world. With the fall of Roma, commercial supremacy passed to the city-states of Venezia (Venice) and Genova. These were still primarily concerned in exchanging the luxuries of the east for the more essential



Prehistoric trade routes in Europe. (By H. F. Cleland, from *Economic Geography*, vol. 3, p. 235.)

ROUTE I.—The sea was used as early as the new stone age and it is probable that mariners from the Mediterranean reached Great Britain, Ireland and as far north as Denmark before metals were known, probably before 3000 B.C. In the early Bronze Age mariners were attracted to Denmark by the amber, to Ireland by the gold, to Cornwall by the rich deposits of tin and copper. When the Irish gold deposits were exhausted trade with Ireland practically ceased and civilization stagnated or decayed. Cornwall was the principal source of tin for 3,000 years and the metal was transported, largely as bronze, across the English Channel to Gaul, and thence to the Mediterranean and elsewhere. There was also a trade between Great Britain and Denmark. Marine trade with Denmark became unimportant after the opening of the land routes, especially the important Elbe route (Route II). When metallic iron came into use, land routes became less important and sea trade increased because of the widespread distribution of iron ore.

ROUTE II.—The Elbe route (the Elbe, Moldau, Inn, Adige) and Route III were the most important thoroughfares in prehistoric times. The Elbe route was first used about 1800 B.C. and continued in use until after the beginning of the Christian era. Along it amber was transported to the south and exchanged for the bronze of Bohemia and the manufactured bronze weapons and vessels of Italy. The civilization of the Bronze Age in Europe (which was far from barbarous) was largely due to the ideas and wares carried over this route by traders. When salt was mined at Hallstatt and Salzberg in the early Iron (and doubtless in the Bronze) Age, it was probably carried long distances, to Bohemia on the North, which is destitute of salt, and east and west along the great Danube route (Route VII).

ROUTE III.—The Vistula, Oder, March route became important when the amber of East Prussia was re-discovered early in the Iron Age, and along it a brisk trade was carried on, beginning about 700 B.C.

ROUTE IV.—The Vistula-Dniester route to the Black Sea was opened when Greek colonies were established on the Black Sea.

ROUTE V.—The Rhone-Rhine route became an important artery of commerce, especially after the establishment of the Greek Colony at Marseilles and along it the arts and crafts of the south were carried to the north. But it had been used for many centuries before this.

ROUTE VI.—A route of some importance which led into Italy passed along the



commodities of northern Europe, and so important was this trade that it enabled them to reach unexcelled heights of wealth and power.

The Turkish conquests interrupted the use of these trade routes, and the discovery of the route around the Cape of Good Hope completely changed the course of commerce. The discovery of America accentuated this change, and the trade of the Mediterranean with the Red Sea and the Persian Gulf nearly disappeared. At the same time Spain and Portugal, which were well situated to take advantage of the new trade routes with the east and with Central and South America, came forward as the leading commercial nations. With the growth of the American colonies, however, the northern European countries were better situated from the point of view of distance, and the North Sea became the focus of the transatlantic routes. Today the greater number of ocean routes from Europe radiate from the North Sea, although the construction of the Suez Canal caused a revival of trade between the Mediterranean and the east. Recently, also, the expanding trade of the Black Sea ports has been increasing the commercial importance of the Mediterranean.

The Baltic reached its maximum relative importance in commerce during the period of the Hanseatic League; but although it probably carries more trade today than ever before, its comparative isolation and the shallowness of its harbors have been sufficient to reduce it to secondary importance.

**Coastal Trade.**—Because of Europe's innumerable islands and many peninsulas, coastal trade has always been of importance. Relief and comparative isolation have been responsible for nearly all the trade between the Scandinavian Peninsula and the rest of Europe moving by water. Today car ferries connect København and Malmö, so that passengers and freight may go from any of the principal western European cities to the chief cities of Norway and Sweden without changing cars; but even with these improved facilities the water route is essential and is the most used. Obviously all trade between the British Isles and the rest of Europe must move by sea, and the cross-Channel routes from Dover to Calais or the Hook of Holland are busy

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upper Rhine, over the St. Bernard Pass and down the Ticino to the bronze workers of the Po Valley.

**ROUTE VII.**—The Danube valley has been populous since early Neolithic times; along it there have been repeated movements of peoples and trade routes have traversed it. The salt of Hallstatt and Salzberg and the iron workings of the early Iron Age give it a greater importance than it had previously had.

**OTHER ROUTES.**—The Seine, Loire, and other rivers in France, the Werra, Fulda, Saale in Germany and other stream valleys were used for local trade.

water highways. Relief tends toward the isolation of the principal peninsulas of the Mediterranean. Thus trade between the Iberian, Italian and Grecian Peninsulas moves largely by water, and the many islands of the Mediterranean add to this coastal trade. Some passenger and much freight traffic also moves by water from the Mediterranean area to northwestern Europe. Much of Russia's commerce with other sections of Europe passes through the Black Sea ports of Odessa and Batum, and also through Leningrad on the Gulf of Finland. Almost no section of Europe, except the east, is far removed from the coast, and thus it is not surprising that coastal transportation has developed to such a great extent.

**East and West Land Trade Routes.**—Relief plays the major part in the location of land trade routes within the continent. The European plain is the path of the principal east and west routes. It is so favorable that it is possible to pass from Hendaye on the Franco-Spanish border to the eastern part of Russia without going through a tunnel or passing over an elevation of more than six hundred feet. Moving by way of the Gap of Charante and the Gate of Poitu, this route reaches the Paris Basin. From Paris it proceeds to Bruxelles (Brussels), then skirts the northern edge of the old Massifs of the Ardennes and Westphalia by way of Hanover to Berlin. Leaving this city, it traverses the plains of eastern Germany and Poland to Warszawa (Warsaw), whence the wide-gauge Russian railroads carry it on to Moskva (Moscow) and thence to the Urals. Favorable relief has made this route the chief east and west path in the movement of peoples, goods and cultures. The number of important cities along its course attests to its past and present importance.

Another important east and west link in trade routes centers around the famous Belfort Gate between the Vosges and the Jura Mountains. This provides an easy passage between the Rhine Valley and the Upper Rhône-Saône Basin. Connections from it are also made by way of Dijon with the Paris Basin, and by way of St. Étienne with the valley of the Loire. This gap has been of great strategic importance in the past. At present it is connected by both rail and water with the Mediterranean, the Rhine Valley, the Paris Basin, and the Basin of the Loire.

Between the Vosges and the Ardennes the Lorraine Gate provides a passage between the Paris Basin and the central Rhine Valley which is of major commercial and strategic importance. This route runs from the Paris Basin by way of Nancy or Metz to Strasbourg. It played an important part during the World War, and is today probably the

most heavily fortified passageway in the world. Its commercial importance is indicated by the fact that it is followed by important rail lines, and by canals connecting the Upper Marne, Meuse and Moselle with Strasbourg.

**North and South Land Trade Routes.**—The Danube Valley provides the most important route between northwestern and southeastern Europe. Ever since prehistoric times it has been one of the major links between Europe and Asia. The Huns, the Magyars, and the Turks have followed its course northwestward, and European peoples have used it as an avenue of penetration toward the east. In commerce it has always been of major importance. Here again the cities on its course, such as Wien (Vienna), Budapest and Beograd (Belgrade), testify to its importance. Toward the south an important route branches off at Beograd and follows the Morava-Vardar depression to Thessalonike (Salonika), while from Beograd there is also good rail communication by way of the Morava and its tributary, the Nishaava, through Niš (Nish) and Sofiya (Sofia) to the Maritsa Valley, and thence to Istanbul.

The Rhône-Saône Basin has been the most important route between the Mediterranean and northwestern Europe. Through it passed prehistoric man; later it served as a pathway for the Roman legions in their invasion of Gaul, and today the trade which passes through it is of sufficient importance to make Marseille, the port at its southern end, one of the largest ports of the Mediterranean. Its advantages lie in the fact that it traverses the long and nearly level valley of the Rhône and its tributary, the Saône, going thence over a low watershed to the Paris Basin and the ports of the North Sea. The fact that no national boundaries have to be crossed in going from the Channel to the Mediterranean is another advantage of no small importance. As has already been noted, this route is connected with the valleys of the Rhine and the Loire, and its lower section has connection, through the Gate of Carcassonne, with the Basin of the Aquitaine.

**Mountain Barriers to Trade.**—The Alps, while high and of considerable extent, have never prohibited cross communication, due to the presence of relatively low passes and the glaciated valleys which provide easy approaches. There are evidences that prehistoric man used these passes, and since that time they have been constantly used for north and south travel, although not without considerable difficulty. Today they are crossed by important railways which make use of tunnels through the highest elevations. Much of the trade between the Paris Basin and Italy goes by way of Genève (Geneva) and the

Simplon Pass, and much of the German-Italian trade makes use of the St. Gotthard Pass. The Mount Cenis Tunnel between Lyon and Torino (Turin) provides communication between the Rhône Valley and northern Italy.

Farther to the east the Brenner Pass connects Bavaria with the Mediterranean. This route runs from München (Munich) by way of Innsbruck to Verona and Venezia. It has been of great historical importance, and it played no small part in making Venezia the leading commercial center of the Middle Ages. Although its importance has somewhat declined, it is still extensively used.

The low elevations between the Alps and the Dinaric Alps provide the way for railroads connecting Austria with Trieste, and Fiume with the Hungarian plain. These routes were of considerable importance before the World War, Trieste being the chief port of Austria and Fiume the leading port of Hungary. Today these routes are cut by national boundaries, and both cities are within Italy, which has other ports on the Adriatic. Consequently, they are of less importance than formerly.

The Karst slopes of the Dinaric Alps serve as a most effective barrier to transportation. They are crossed by only one standard-gauge railway, and other means of cross communication are limited. Consequently, despite its long coast line, Yugoslavia is most effectively cut off from the sea.

The Pyrenees have long been an effective barrier to transportation. The principal rail routes between Spain and France pass around the eastern and western ends of these mountains. It was not until 1928 that a railway was constructed across them. The height and ruggedness of the mountains, and especially the lack of glaciated valleys to serve as easy approaches to the passes, have been the principal factors which have retarded cross communication.

The Caucasus resemble the Pyrenees in the difficulties which they impose to cross transportation routes. It is possible that railways may be constructed across them in the future, but so far the demands for such roads have not been sufficient to lead to their construction.

The Scandinavian highlands are the only extensive barriers to east and west transportation to be found in northern Europe. Their elevation and width, as well as the climatic conditions near the crest of the divide, have been serious handicaps to cross communication. The route from Luleå to Narvik is the only one crossing the highlands in the northern section of the peninsula. However, toward the south, where

the mountains are lower and more broken and where most of the population is concentrated, three railways cross the peninsula.

### THE COMMERCE OF EUROPE

**Historical Development.**—The cities of Krētē, the Grecian and Italian Peninsulas and other Mediterranean areas grew so rapidly that the limited plains surrounding them could no longer provide adequate food. Consequently it became necessary to import wheat, fish and similar products. As the size and prosperity of these cities increased, their merchants also became interested in trade with the east. Thus an active trade developed early on the Mediterranean and continued even after the fall of Roma.

In central and northern Europe commerce was of slight importance prior to the sixteenth century. Population was sparse and communities were for the most part self-sufficient. A few luxuries and even fewer necessities were exchanged, but this commerce played little part in the life of the average inhabitant of these regions.

Although this commerce was of limited economic importance to the continent as a whole, its historical contributions were great. The majority of European explorers were actuated by a desire to develop new trade routes or to discover new areas with which to trade. The activities of these men led to the discovery and exploitation of many parts of the non-European world. As a consequence, Europe was enriched by cultural and material contributions from these new lands, and European culture was spread throughout the world.

This exploration and the commerce which developed from it played an important part in the maritime supremacy of the continent. Ships and sailors were necessary to carry on this expanding trade, and European navigators had to be familiar with world routes and able to meet conditions found on any sea. Accordingly, a large merchant marine was built up and a breed of capable sailors developed.

Internal trade was developing along with intercontinental trade. Differences in climate, relief, soil and natural resources led to the exchange of goods between the various nations of the continent. This was accompanied by cultural exchanges and tended toward the development of a common culture around each of the European seas and along each of the major waterways.

This gradual increase in trade which accompanied the breakdown of the organization of mediæval society and the opening up of the new world, at first influenced only the upper classes in northern and

central Europe. It was not until the inventions and improvements of the seventeenth and eighteenth centuries cheapened transportation costs that the middle and laboring classes were affected. But once it had been made effective, the increased purchasing power of these classes provided a powerful stimulus and caused trade to expand rapidly.

The invention of the steam engine and the development of the modern factory system really laid the basis for the present commercial supremacy of Europe. The steam engine made possible the invention and development of the steamship and railway locomotive. These, in turn, greatly increased the speed of land and water communication,



Duisburg, at the junction of the Ruhr and the Rhine. The greatest river port in the world. (Courtesy of the German Tourist Information Office, New York.)

materially reduced its cost, and contributed much to its regularity. European peoples were thus drawn together more closely, and Europe was brought into closer economic, cultural and political contact with the rest of the world.

The rapid growth of manufacturing which characterized the nineteenth and early twentieth centuries promoted trade by making necessary the opening up of outside markets and sources of raw materials. It also led to a sharp increase in population, and this frequently necessitated the importation of food. These changes fostered greater specialization and world interdependence and caused trade to play an increasingly important part in the economy of the European countries.

**The Present Importance of European Commerce.**—Today millions of Europeans are consuming foods brought from every continent, and are working in factories upon raw materials drawn from every corner of the known world. Likewise, many are dependent for their income upon the sale of cotton cloth to the Orient, mining equipment to Australia, hardware to South America, perfumes to the United States, or brass ornaments to the African savages, or upon thousands of other commodities which seek foreign markets. In addition, the small size and limited resources of many of the European states necessitate constant trade with their neighbors in order to satisfy their requirements for foods and raw or finished products. Therefore it is not surprising that European nations carry on more than one-half of the total foreign trade of the world.

TABLE 60  
INTERNATIONAL TRADE BY CONTINENTS  
(percentage of total world imports and exports)  
(U. S. Department of Commerce)

Continent	Imports		Exports		Total Trade	
	1913	1930	1913	1930	1913	1930
Europe.....	65.7	59.0	59.6	53.0	63.0	56.0
North America.....	13.1	16.5	16.7	20.9	15.0	18.7
Asia.....	10.4	12.7	11.2	14.2	11.0	13.4
South America.....	5.2	4.7	6.1	5.7	6.0	5.2
Africa.....	3.2	4.8	3.9	3.6	3.0	4.2
Oceania.....	2.3	2.3	2.5	2.6	2.0	2.4

Economic difficulties which occurred as a result of the World War and the increased commercial activities of other continents, have caused European foreign trade to suffer a relative decline since 1913. The former factor will doubtless be temporary and thus permit some recovery; but the latter seems likely to be permanent, and will prevent Europe from fully recovering its pre-war position.

The continent as a whole, and the great majority of the European countries, have an excess of imports over exports, or what is usually known as an "unfavorable balance of trade." Thus in 1930 Bulgaria, Czechoslovakia, Finland, Germany, Hungary, Lithuania and Poland were the only European states with an export surplus. Under normal conditions a surplus of imports is balanced by income from such other

sources as foreign investments, shipping, immigrant remittances and tourists' expenditures, and is frequently an indication of the wealth and economic maturity of the nations concerned. Since the World War, however, some of the economically weaker states have had to make up this surplus by borrowing, a dangerous condition if allowed to continue.

The nations of northwestern Europe are commercially the most active, whether the unit of measure be total value or per capita trade. Of the first ten nations on the basis of total foreign commerce, all except Italy, Russia and Czechoslovakia are included in this region; while on the basis of per capita trade, all except Austria lie within it. The commercial importance of this area is largely a reflection of its favorable situation with respect to overseas trade, and the high degree of productivity of its population.

TABLE 61  
PER CAPITA TRADE OF THE EUROPEAN  
COUNTRIES, 1930  
(in dollars)  
(U. S. Department of Commerce)

Country	Imports	Exports
Denmark.....	130.6	121.8
The Netherlands.....	122.7	87.3
Switzerland.....	119.9	82.9
United Kingdom.....	111.0	70.0
Belgium.....	103.0	87.0
Norway.....	101.8	64.3
Irish Free State.....	93.8	73.6
Sweden.....	72.6	67.6
Austria.....	56.6	38.9
France.....	49.9	40.9
Germany.....	38.7	44.8
Finland.....	36.4	37.4
Czechoslovakia.....	31.6	35.2
Latvia.....	30.1	25.2
Estonia.....	23.6	23.1
Italy.....	22.1	15.5
Greece.....	22.1	12.1
Spain.....	20.9	19.6
Hungary.....	16.8	18.6
Portugal.....	16.2	6.4
Lithuania.....	13.4	14.3
Yugoslavia.....	8.8	8.6
Poland.....	8.1	8.8
Rumania.....	7.3	9.3
Bulgaria.....	5.6	7.5
Russia.....	3.4	3.3
The United States.....	24.5	30.2



## THE CHARACTER OF EUROPEAN FOREIGN COMMERCE

**Overseas Commerce.**—The dense population and numerous industries of Europe require more foodstuffs and industrial raw materials than that continent can possibly produce. Accordingly it is necessary to import a constant stream of these products from all portions of the world. On the other hand, European industries are turning out a greater quantity of manufactured goods than the peoples of the continent can consume. Consequently, many of these move overseas in exchange for the necessary imports. The major part of the trade between Europe and the other continents thus consists in the importation of foods and industrial raw materials, and the exportation of manufactured goods. This condition is characteristic of the United Kingdom, Germany, Italy, The Netherlands, Belgium, Switzerland and all of the leading commercial nations. Even in France, which is more nearly economically independent than the other commercial leaders, this same type of trade dominates. The United States is the most highly industrialized nation outside of Europe, and yet most of the trade between the United States and Europe consists in sending raw materials and foodstuffs to Europe, and bringing manufactured goods to the United States. In the trade between Europe and other parts of the world this characteristic stands out even more strikingly.

**Trade within the Continent.**—The great part of the foreign trade of the European nations is not with territories outside of the continent, but with neighboring countries. This is less true of the great commercial countries of the North Sea area, and more true of the interior countries or those of less commercial importance. For example, the United Kingdom draws 37 per cent of its imports from Europe and sends 30 per cent of its exports to that continent, as well as carrying on 66 per cent of its re-export trade with European nations. It does a larger percentage of trade with sections outside of the continent than does any other European state. From the same point of view, Germany may be taken as typical of the transition countries, which, while carrying on a large overseas trade, are even more dependent upon neighboring continental areas than is the United Kingdom. Germany sends approximately 70 per cent of its exports to other European countries, and draws upon Europe for some 50 per cent of its imports.

Czechoslovakia is typical of the interior countries which carry on the greater part of their trade with their neighbors, and are much less

interested in overseas trade. This country sends 83 per cent of its exports to other European powers, and receives 84 per cent of its imports from them.

Thus it is evident that the distribution of trade as between European and non-European sources differs in various sections of the continent. The United Kingdom is the only nation carrying on the major part of its trade with non-European regions; among the other nations, dependence upon trade with their neighbors increases as one leaves the coast and goes toward the interior.

The character of this trade with other European countries varies in accordance with the economic development and resources of the state considered. The highly industrialized nations of western Europe import foods and industrial raw materials from the nations of northern, eastern and southern Europe, and in return send them manufactured products. The United Kingdom, Belgium, Switzerland, Germany and The Netherlands are typical of the nations of this type. France also belongs to this classification, although from the point of view of food and certain raw materials it has a greater degree of economic independence than the rest. Of the central European nations, Austria and Czechoslovakia may also be included, although they have not achieved quite the degree of industrial development that characterizes the nations of the North Sea region. Italy is the only Mediterranean power which merits a similar classification.

There is another group of countries which exports primarily agricultural products and imports chiefly essential raw materials and manufactured goods. Among the western European powers, Denmark and the Irish Free State are most typical of this group. In central Europe, Lithuania, Latvia, Estonia, and, in the south central region, Hungary, Bulgaria, Greece and Albania, belong to this classification. These countries do some manufacturing, and may even export a few manufactured products as well as a few raw materials; but they are primarily concerned in the export of agricultural products and the importation of other raw materials and manufactured goods.

There is a third group in which the exportation of agricultural products and other raw materials are nearly equal, and which import chiefly manufactured goods. Spain and Portugal belong to this group, as do Yugoslavia, Rumania, Russia and Poland.

A fourth and even more limited group includes those countries which are primarily exporters of industrial raw materials, and which import foods, other raw materials and manufactured goods. Within this classification are to be found Norway, Sweden and Finland. Some

food products and manufactured goods are exported from these countries, and frequently the raw materials produced are put through a preliminary manufacturing process before being exported. However, their economic life depends chiefly upon the exchange of their surplus raw materials for the other products needed.

Thus the foreign trade of the various European countries with one another depends upon the stage of economic development achieved, and upon the amount and diversity of the resources which they contain.

**Re-export Trade.**—Many of the leading European ports are busily engaged in importing goods from all sections of the world and re-exporting them to other areas. Trade of this character is especially important in the United Kingdom, where it amounts to between \$500,000,000 and \$600,000,000 a year. Such North Sea ports as London, Anvers, Rotterdam, Amsterdam, Hamburg and Bremen are actively engaged in this trade, while in the Baltic it is especially important in Köbenhavn, Stockholm and Danzig. Marseille, Genova and Thessalonike carry on similar activities in the Mediterranean region. In order to encourage this type of trade, many European nations have established free ports where goods may enter and leave without interference from normal customs regulations.

**Restrictions to European Commerce.**—Physical barriers are far less important than those of a political character in restricting the international commerce of the European nations. Where the amount of trade justifies the expense, mountain or water barriers can be overcome by an active people, as is illustrated by the commercial importance of Switzerland and Greece. Political restrictions, however, are more serious. They are apt to interfere with normal channels of trade, and to break up such economic unity as may exist in the various regions. This type of restriction has become especially important since the World War, as a result of the ultra-nationalism which has characterized so many of the European states. Nowhere is it more noticeable than among the states formed from the old Austro-Hungarian Empire. Here high tariff walls restrict the export of Hungarian wheat to Austria, Austrian textiles to Czechoslovakia, and Czechoslovakian iron and steel to Hungary. Thus the economic unity of the Middle Danube is destroyed, and the commercial importance of each of the nations is reduced.

These commercial barriers restrict industrial markets, and consequently limit the ability of European industries to compete with those of the United States. Russia is, perhaps, the only European country with a sufficiently large home market and a sufficient diversity of

resources not to be seriously handicapped by such limitations. Not only do these barriers restrict trade and manufacturing, but they keep alive national hatreds and foster new animosities which serve as a serious threat to world peace.

**The Future of European Commerce.**—The future of European commerce will depend primarily upon the economic productivity of the continent and upon the policy of the European nations with respect to economic self-sufficiency. The losses and disorganization incident to the World War reduced productivity, while the animosities and rivalries arising from that conflict led to the rapid spread of economic nationalism. As a consequence, many of the nations have not as yet recovered their pre-war commercial importance. For this reason some authorities have concluded that Europe is definitely and permanently on the down grade, and that other portions of the world will soon surpass it in industrial and commercial activity. This point of view, however, fails to take into consideration the enormous physical, human and historical advantages of the continent. These advantages, combined with the fact that almost no European state has resources of sufficient quantity or variety to permit economic independence, should enable Europe to retain its leadership, although it may never recover its relative pre-war importance.

## BIBLIOGRAPHY

- Cleland, H. F., "Trade Routes in Prehistoric Europe," *Economic Geography*, 1927, vol. 3, pp. 232-238.
- Evans, T., "Air Travel in Central Europe," *Bulletin of the Geographical Society of Philadelphia*, 1932, vol. 30, pp. 146-152.
- Hines, W. D., "Report on Danube Navigation," League of Nations, Geneva, 1925.
- League of Nations, Economic and Financial Section, *Memorandum on Production and Trade*, Geneva, 1926.
- *Memorandum on International Trade and Balances of Payments, 1912-1926*, Geneva, 1927.
- *International Trade Statistics, 1930*, Geneva, 1932.
- McPherson, L. G., *Transportation in Europe*, Henry Holt & Co., Inc., New York, 1910.
- Matthews, W. H., Jr., "Norse and Hanseatic Trade Routes and Commodities," *Bulletin of the Geographical Society of Philadelphia*, 1931, vol. 29, pp. 35-46.
- Ormsby, H., "The Danube as a Waterway," *Scottish Geographical Magazine*, 1923, vol. 39, pp. 103-113.
- Smith, H. B., "European Economic Conditions Which Affect Markets for Agricultural Products," *Trade Information Bulletin No. 235*, U. S. Department of Commerce, Washington, 1924.

Strong, H. M., "Distribution of Agricultural Exports from the United States," *Trade Information Bulletin No. 177*, U. S. Department of Commerce, Washington, 1924.

Wrenn, J. E., "World Trade in Vegetable Oils and Fats," *Misc. Series, 123*, U. S. Department of Commerce, Washington, 1923.

## REGIONAL DIVISIONS OF EUROPE

## NORTHWESTERN EUROPE

THERE is little in common between the modes of living of the factory worker of the Ruhr, the Ukrainian peasant, and the cultivator of the irrigated gardens of the Mediterranean. Each follows a different occupation, each has had a different historical background, and each is faced with different problems of adjustment to his environment. Numerous other differences of a more local character separate the peoples of the continent. Accordingly, it is helpful to divide Europe into convenient units, in order to secure a clearer understanding of the relations between man and environment in each. The units used will for the most part be nations, and these in turn will be roughly grouped in such a way as to reflect general differences in human activity. In the discussion of the various states, divisions will frequently be made on the basis of human or physical differences. Such a method of treatment is not ideal, but it is made desirable by the form in which data concerning European activities are available, and by the fact that nationalism is of such importance in the present-day world.

The three major groupings of nations which will be made are northwestern Europe, eastern Europe and southern Europe. These groups are based on differences in human activity and development, which in turn are in part a reflection of the physical differences existing in the three sections of the continent. Northwestern Europe is a region of great industrial and commercial centers, within which agriculture is intensive and highly diversified. Eastern Europe, on the other hand, is a section in which the population is principally concerned with producing a few agricultural products on an extensive scale, in exploiting forest or mineral wealth, and in exchanging its agricultural or raw material surplus for necessary manufactured goods. Southern Europe

resembles the east in that it is primarily agricultural; but the agriculture consists largely in the intensive cultivation of irrigated gardens, the pasturing of flocks, and the raising of winter grains in the non-irrigated areas. Here also Phœnicia, Greece and Roma have left their heritage in numerous commercial cities and in traditions of cultural and political leadership. These general groupings are admittedly crude, but they do reflect differences in human development and they have the advantage of simplicity.

In northwestern Europe man is more active and more productive than elsewhere throughout the continent. This activity has been reflected in noteworthy economic, political and cultural attainments. Here are situated such leading industrial areas as "Black England," Belgium, northern France, the Ruhr and Saxony. Here also are the leading commercial nations of Europe, and such great ports as Liverpool, London, Anvers, Rotterdam, Hamburg and Le Havre. In the more fertile and level portions of this division is to be found a development of agriculture unexcelled in productivity and diversity by that of any similar area throughout the world. Within this region lie such great colonizing powers as the United Kingdom, France and The Netherlands, which today possess colonial empires of greater extent and value than those of any other nations. Truly this is an area of the most intensive and diverse human activity, and one which is consequently of major interest.

However, there are wide physical and human differences within this northwestern region. The industries of Switzerland differ widely from those of the Ruhr, and the agriculture of Denmark is in decided contrast to that of Bohemia. Many of these human differences are a reflection of variations in the physical environment. Accordingly, northwestern Europe will be subdivided on the basis of physical differences, with relief receiving the major attention. The first division will include those states lying largely within the western highlands or the Caledonian Fold; the second, those lying wholly or in large part in the central European plain; and the third, the nations of the Alpine Fold. An effort will thus be made to group the nations having common human activities based in part on similarities in environmental conditions.

Norway, Sweden and Scotland constitute the nations included within the Caledonian Fold. Similarities in topography and geological background have resulted in interesting similarities in human development within these three states.

## THE SCANDINAVIAN PENINSULA

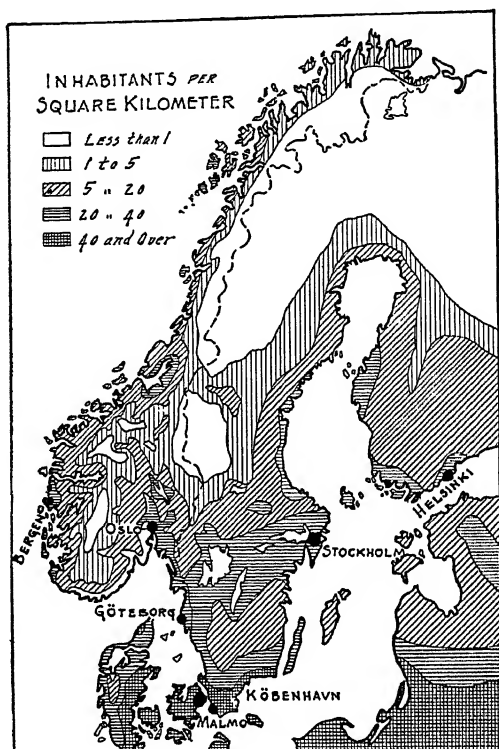
LAND of the midnight sun, home of the Vikings, the Scandinavian Peninsula commands the interest and attention of the world because of its physical difficulties and human accomplishments. Located in a latitude comparable with that of Alaska, with much of its territory consisting of unproductive rocky wastes, it supports only a sparse population, but one whose achievements are out of all proportion to its numbers. For a thousand years these people have been leaders in maritime activity. Their ships are to be found in every great harbor throughout the world, and their sailors are numerous in the merchant marine of every maritime nation. Noted as fishermen, they possess the last great whaling fleet in the world. They have produced many famed explorers, one of the most notable of whom, Leif Ericson, is supposed to have touched the shores of America some five hundred years before the arrival of Columbus. Among their numbers are to be found many men notable in all the cultural activities. Economically they have been efficient in the use of their four great resources, iron, timber, fish and water power, and have recently developed important manufacturing industries.

**The Population of the Peninsula.**—The great majority of the Scandinavians are tall, fair and long-headed, being members of the northern European race. The ability and industry of this group are evidenced by their economic and cultural achievements, and by their present high standards. They have been pioneers in exploration, trade, industry, literature, music and science, and have given to the world such leaders as Ihsen, Grieg, Björnson, Amundsen, Linnæus, Berzelius and the Nobel brothers. The general intellectual and educational standards of the mass of the population have also been high, and have enabled them to appreciate and perpetuate the work of their leaders. Considering the limitations imposed by their environment, the achievements of these people are truly remarkable.

The population of the peninsula as a whole is very sparse, Norway having but 24 per square mile, while Sweden has only 39. Climate has caused the highlands to be almost uninhabited, and has confined the



areas of dense population to the south and to a narrow fringe along the eastern and western coasts. Thus the most densely settled portions of Norway are near Oslo, around the Skagerrak, between Stavanger and Bergen, and around Trondheim, while scattered settlements border the coast as far north as Hammerfest. In these areas climate makes human habitation possible, and agriculture, fishing and commerce provide em-



The distribution of population in the Scandinavian Peninsula. (From *The Geography of Norway*, by D. R. Bergsmark, courtesy of the Bulletin of the Geographical Society of Philadelphia.)

ployment. The areas of greatest density in Sweden are around the central lake district and in Skane, although small communities follow the agricultural and forest districts as far as the Finnish border, and surround the iron mines of the north. Greater agricultural, forest and mineral resources cause a somewhat wider distribution of population in Sweden than in Norway.

#### ENVIRONMENTAL FEATURES

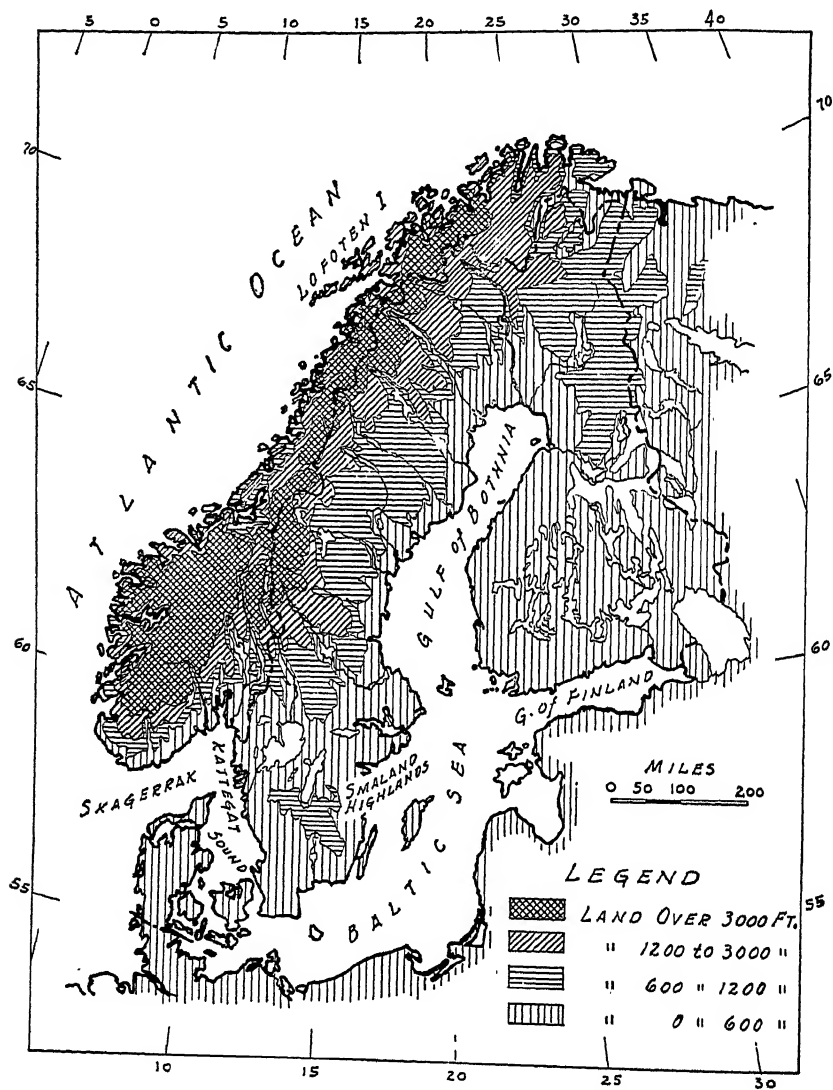
**Situation.**—Varying from 250 to 500 miles in width, and over 1000 miles in length, the Scandinavian Peninsula includes an area

about four times the size of New England. Its length is better appreciated when it is realized that the distance from Malmö to the North Cape is approximately the same as from the former to Sicilia (Sicily). From the point of view of size it might thus be expected to support a large population. However, as we have said, it is situated in approximately the same latitude as Alaska, and this, combined with its large proportion of highlands, causes the density of the population to be greatest in its southern end. The northern location of the peninsula also tends to isolate it from the continent and to give it an insular character. Thus most of its contacts with other portions of the continent are by sea, and its relations with Denmark have been far closer than its relations with Finland or Russia.

The most important geographical factor in its location is its situation with respect to the Atlantic Ocean and the North Atlantic Drift. It lies to the east of the ocean, whose surface waters are warmed by this continuation of the Gulf Stream. Westerly winds carry this tempering influence inland, making human occupation possible in latitudes which otherwise would not be habitable. This influence of the ocean is naturally much greater on the western side of the peninsula, and thus habitation is possible farther north in that area.

**Relief.**—The peninsula consists of an old block of the Caledonian Fold, so tilted that it has a sudden steep western slope and a broad, gentle slope toward the east. The highlands have no sharp crest line, but consist of a plateau, deeply dissected and averaging some three thousand feet in elevation and a hundred miles in width. The crest is so broad and flat that from the west it resembles the bottom of a boat; hence it has been given the name Kiolen, "The Keel." The flat surfaces of these highlands hold the greatest snow fields and glaciers of Europe. Where they are not covered by snow and ice they are, for the most part, cold and barren, and covered with a tundra vegetation. They thus form a most effective barrier to human contacts, and an excellent international boundary. For the northern two-thirds of its length the Swedish-Norwegian boundary follows this crest, but south of the latitude of Trondheim it shifts to the east to include in Norway the valley of the Glommen and the Oslo Fiord. This highland barrier causes Norway to face the Atlantic and western Europe, while Sweden faces the Baltic and central Europe. Frequently it has retarded communication and trade between these people, a condition which made their political union unnatural and difficult to maintain. As the major portions of the population of each country are in the south, each has found the water barriers separating them from Denmark easier to

overcome than the highland barriers separating them from each other. Denmark has consequently exerted an important unifying influence over the peoples of the peninsula, once binding them together by force, but today bringing them together by persuasion and moral influence.



Relief map of the Scandinavian Peninsula and Finland.

In addition to being an effective human boundary, these highlands constitute a climatic barrier, influencing the extent to which the winds can carry their moderating influence and moisture inland. They are,

accordingly, largely responsible for the climatic differences to be found on the opposite sides of the peninsula.

The western side of these highlands drops rapidly to the sea. Here stream and glacial action and submergence have given rise to the rugged and irregular fiord coast line of Norway. The fiords consist of U-shaped glacial valleys whose abrupt walls rise to elevations of from 2000 to 5000 feet, and whose waters are deep enough to float the largest ship. Some are nearly 100 miles in length, and, due to their navigability, they carry the oceanic influence far inland, thus bringing the entire population of Norway in close contact with the sea. There is little level land except where the streams form deltas as they enter the fiords, or where hanging valleys occur far up on their sides. From these valleys beautiful waterfalls frequently plunge to the waters of the fiord itself. The shore line is dotted with a continuous chain of islands known as the "Skerry Guard." These are for the most part barren and rocky, but provide a strip of quiet, protected water between themselves and the shore.

This coast line has exerted an important influence over the peoples of the west. The lack of extensive agricultural lands, the innumerable harbors, the protected waters of the coast, and the abundance of fish offshore naturally turned their attention to the sea. The difficulty or impossibility of land communication between the various settlements located in the fiords had a similar influence. It also had the effect of isolating the various communities and encouraging self-government, thus retarding unification, and leading even today to the retention of a considerable degree of local autonomy. The coast line is justly famed for its beauty, and attracts many tourists, whose contributions are economically of much importance. This abrupt western slope, combined with heavy rainfall and numerous glaciers and snow fields, creates an ideal situation for the existence of water power, and is the site of the greatest potential water power in Europe.

The eastern slope of the peninsula is more gradual, descending to sea level in a series of broad terraces. There is far more level land than on the west, and a much smaller percentage of waste territory. Bordering the Baltic is a bay rather than a fiord coast; harbors are less numerous here, but are sufficiently plentiful to meet the needs of the inhabitants. The Skerry Guard occurs again on the east, except in sections of the Gulf of Bothnia and off the coast of Skane, but the character and distribution of the islands is different from that along the Norwegian coast. They are less numerous, usually being low and fertile and supporting tree growth or agriculture, but they increase in



**Climate.**—Scandinavia has two types of climate. West of the crest line is to be found a typical oceanic climate, with cool summers, mild winters and heavy precipitation. East of the crest the climate is really a transition between the oceanic and the continental. The summers are warmer, the winters colder, and the precipitation less. However, the mountains are not sufficiently high to remove all the oceanic influence, and the climate has less seasonal variations than typical continental climates of the same latitude.

**Temperature.**—The moderating influences of the warm ocean waters give the west coast remarkably mild and uniform temperatures. Here there is little variation between the north and south, especially in the winter, during which season the harbors are open as far as North Cape, and grazing is possible on the lower elevations. As one moves toward the east temperatures rapidly become more extreme, as is illustrated by the fact that in Oslo the average January temperature is eight degrees colder than in Bergen, while the July temperature is six degrees warmer.

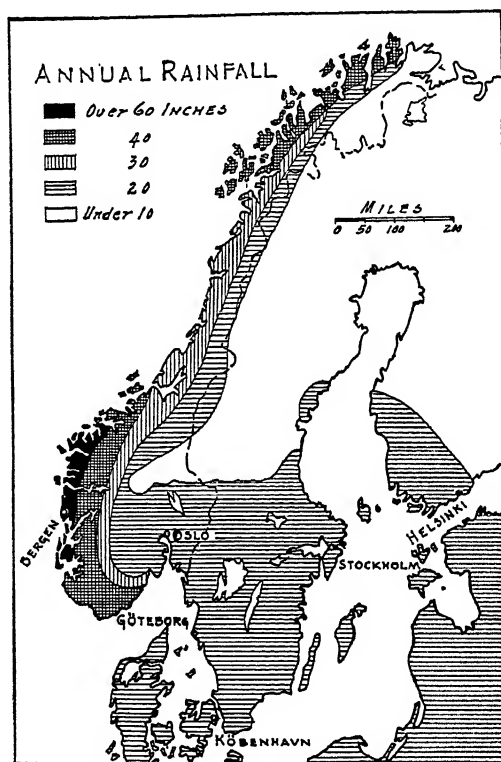
Except along the west coast, the latitude decidedly modifies the temperature. In Skane the growing season averages 142 days in length, while in northern Sweden it is restricted to 88 days. The long cold winters of the north limit human habitation to occasional settlements along the coast or near important natural resources, although a few reindeer-herding Lapps occupy the interior.

On the plateau, elevation combines with distance from the sea to provide a severe climate. Throughout the higher elevations the winters are especially long and cold, giving rise to a tundra type of vegetation and rendering the area unsuitable for man. These highlands contain important glaciers, and were the center from which the ice moved out over northern Europe during the last glacial epoch.

**Precipitation.**—In all portions of the Scandinavian Peninsula the rainfall is ample for ordinary agricultural purposes, although there are wide sectional variations in amount and seasonal distribution. The heaviest fall occurs along the western coast, where it varies from 80 inches in the south to 40 inches in the north. The highland backbone of the peninsula removes much of the moisture from the winds, and the east is much drier than the west. This is well illustrated by the variation between Bergen and Stockholm, the former having 78 inches of rainfall annually, while the latter has but 19. Sweden has an average annual rainfall of some 20 inches, but locally it varies from 35 inches in Skane to less than 10 inches in the extreme north. Rain falls at all seasons throughout the peninsula, but in the west the

maximum occurs during the winter, while the central and eastern sections have a summer maximum.

The fact that this rainfall usually comes in the form of light rains or drizzles has a bearing on the suitability of the peninsula for human habitation. In western Norway it rains or snows on more than 200 days during the year, and is cloudy and foggy on many others. The number of days on which rain occurs and the amount of cloudy



The average annual rainfall in the Scandinavian Peninsula. (From *The Geography of Norway*, by D. R. Bergsmark, courtesy of the Bulletin of the Geographical Society of Philadelphia.)

weather decline toward the east, but even here the sun is obscured by cloud or fog a considerable portion of the time, especially during the winter. Fortunately the minimum of cloudiness in both east and west occurs during the summer growing season. This cloudy, foggy weather is disagreeable but not unhealthful, and may be responsible for the peninsula having such a large proportion of blondes.

**The Land of the Midnight Sun.**—The far-northern location of the peninsula leads to considerable variations in the length of day

and night as between seasons. Throughout the entire area the sun is never high in the heavens, even in midsummer; and at the North Cape there is a sunless period lasting two and one-half months during the winter. This is, in part, counterbalanced by a period of continuous sunlight lasting for the same length of time during the summer. Even in the southern part of the peninsula the winter days are very short and the summer days correspondingly long. These variations in the length of day and night require human adjustments which are sometimes difficult to make. The long, dark winters of the north are depressing, and discourage man's work.

### NORWAY (NORGE)

A stern land of rugged mountains, cloudy skies, treeless wastes and rocky coasts, Norway is no place for weaklings. Only men of tire-



Seven Sisters Falls, Geiranger Fjord, Norway. (Courtesy of the Norwegian Government Railways.)

less energy and unusual ability can force a living from its reluctant hands. Yet it is a fascinating land; and its thousands of beautiful waterfalls, its magnificent fiord coasts, its glaciers and its midnight sun attract tourists from every corner of the world. It is especially interesting to the geographer, because here man has had to adapt himself unusually well to his environment in order to survive.



It is a land of moderate size, with a sparse population centering in those areas where nature has relented and allowed a little level land to remain. It covers an area almost exactly equal to that of Italy, and yet it contains a population of only some 2,800,000, or approximately the same as that of our own State of Wisconsin. This indicates a sparsity of population not equaled by any other European power. But it is doubtful whether the country could support more under present conditions, at least without materially decreasing the standard of living. The fact that Norway has been an exporter of men since the days of the Vikings indicates that its capacity to support a population is limited. Only a decided increase in manufacturing will make it possible to support a larger number.

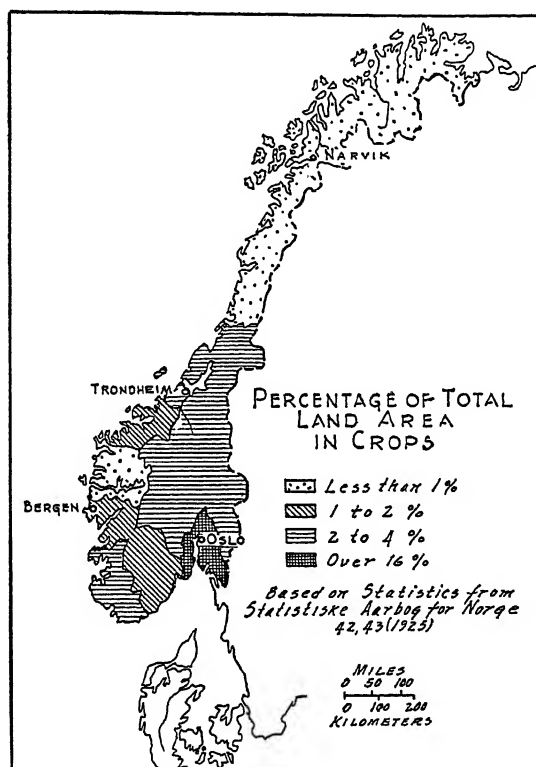
#### AGRICULTURE

Although level land is very limited, 36.8 per cent of the population are engaged in agriculture. But in spite of the number of farmers, Norway cannot make a living from its limited soil, but must import a considerable portion of its food supply. Approximately one-half of its grain, one-third of its fats, and many special food products are imported.

The land available for agriculture being limited, only 3.5 per cent of the land is under cultivation; 21.5 per cent supports forests and the other 75 per cent is waste. Cultivation takes place in limited areas around the heads of the fiords and in long narrow strips along the valleys. The only extensive area of level land is the plain around Oslo, where 450 square miles are suitable for agriculture. The broken-up character of the level land is reflected in the small farms which are characteristic of the country. Some 66 per cent of the farms of Norway are of less than 5 acres, and 98 per cent are of less than 25 acres. These farms cling to the sides of the fiords and hide away in the steep narrow valleys. Unlike many sections of western Europe, the farmers do not live in villages. Here each farm has its frame dwelling and such other buildings as may be necessary. The scattered areas of level land and the small size of the farms make the use of machinery difficult or impossible. Thus hand labor is the rule, and only the most simple agricultural implements are common. This results in intensive cultivation and a large yield per acre, but a small yield per man.

**Hay.**—Nearly 1,000,000 acres are devoted to the raising of hay. This is more land than is used for all the other crops combined. Tim-

othy and clover grow well in this cool, moist climate, but the drying of hay is difficult, and drying racks are a feature of every Norwegian farm. The importance of the livestock industry makes hay of great value, and every blade of grass is cut and cured. In the high mountain pastures where the cattle are taken during the summer, the hay is cut by hand and frequently sent down the mountain sides by cable.



The percentage of land under cultivation in Norway. (From *The Geography of Norway*, by D. R. Bergsmark, courtesy of the Bulletin of the Geographical Society of Philadelphia.)

**Cereal Crops.**—Oats is the most important of the grain crops, considered from the point of view of both acreage and production. It is well adapted to the climate of Norway, as it thrives in cool, moist summers, and its excellence as an animal food also makes it desirable. It is grown in all the agricultural sections of the country except the extreme north, where the short growing season makes its production impossible.

Barley ranks second in importance among the grains. It does not need as long a growing season as other cereals, and consequently it

replaces them in the northern portion of the country and in the higher elevations.

The production of wheat has increased materially since the World War, and has replaced rye as third among the cereals. Its requirement of a moderately long growing season and dry harvest season cause production to be centered in the plains surrounding Oslo.

**Potatoes.**—Potatoes are raised in all the agricultural sections of the country. They are well adapted to the cool, moist climate, and high yields per acre are common.

TABLE 62  
AREA AND PRODUCTION OF PRINCIPAL CROPS IN NORWAY  
(U. S. Department of Agriculture)

Crop	Area (thousands of acres)		Production (thousands of bushels, except as indicated)	
	1909-1913	1926-1930	1909-1913	1926-1930
Hay.....	...	1,107	3,072	2,111 <sup>a</sup>
Oats.....	263	241	11,939	12,889
Barley.....	89	142	3,016	4,877
Potatoes.....	102	120	22,841	30,321
Wheat.....	12	27	306	692
Rye.....	37	20	973	569

<sup>a</sup> Unit, metric ton.

**Livestock.**—The importance of hay and forage crops and the rugged character of most of the land favor the raising of cattle and sheep. In numbers sheep constitute nearly one-half of the livestock population of the country. The cattle are, for the most part, small and well adapted to their mountain environment. They are used for dairy purposes, the raising of beef cattle being uncommon. Dairying is increasing, and dairy products constitute the only agricultural exports of Norway.

## FISHING

Fishing is closely related to coastal agriculture. While only 6 per cent of the working population are classified as fishermen, yet many farmers along the coast supplement their meager agricultural incomes by engaging in this activity. This industry is a direct response to natural conditions. The long indented coast line with its numerous

harbors, the prevalence of excellent fishing grounds off the coast, the limited opportunities for other means of earning a livelihood, and the presence of timber for the construction of boats are all factors which have tended to encourage fishing.

The cod is the most important fish caught, and the center of these fisheries is off the Lofoten Islands. The season lasts from February to June, and the fishermen move northward with the migration of the fish. Most of these fish are dried, and many are exported to Spain



Countryside near Stavanger, Norway. (Courtesy of the Norwegian Government Railways.)

and Portugal. Herring and mackerel are also of considerable importance, and are caught at different seasons of the year from the cod.

Fishing is important in the economic life of the country, the 1929 catch being valued at \$21,788,000, while the exports of fish products amounted to \$40,000,000 and ranked second only to timber products among the exports of the country.

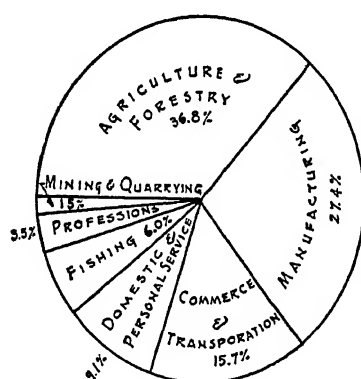
Norway has the largest whaling fleet in the world, and Norwegian whalers are found in all seas where these animals abound. The total value of the catch during 1929 was \$28,193,600. New methods of preparing the oil so that it may be used as a substitute for lard and other edible animal and vegetable oils, have increased its market, and much is exported annually.

## WATER POWER

Norway has developed less than one-fourth of its potential water power, which is variously estimated at from 9,000,000 to 15,000,000 horsepower. Consequently there are great possibilities for the expansion of those industries which depend upon this resource. Already the per capita production and consumption of electricity in Norway exceeds that of any other country of the world, and is more than twice as great as that of Switzerland, its nearest European competitor. The rugged relief, uniform and heavy rainfall, lakes which serve as storage reservoirs, and the absence of other fuels constitute conditions which are ideal from the point of view of water-power development.

## LUMBERING

Forests provide the raw materials for the most important industries of Norway, and these industries furnish the leading exports



Occupations of the gainfully employed population of Norway. Percentage of total employed. (U. S. Department of Commerce.)

of the country. Thus timber constitutes the most important raw material produced. The principal producing forest region of the country occurs in the southeast around Oslo. Extensive areas of timber also extend north from Oslo to Trondheim, and around the latter are located the chief timber-producing sections of the west coast.

In the past, Norwegian forest resources have declined, due to the fact that the cut has exceeded the annual growth. This has been especially true of the west coast forests. Recently, however, modern forestry

methods have been put into operation and these, if successful, should preserve this valuable resource.

### MANUFACTURING

Manufacturing is assuming a constantly increasing importance in Norway. Today 27 per cent of the working population is engaged in this activity, and this marks an increase of more than 100 per cent within the past fifty years. It seems probable that the country will become even more highly industrialized in the future, and by so doing it should be able to support a larger population.

**Woodworking Industries.**—The manufacturing of Norway is based on the preparation of local raw materials and the use of water power. Consequently it tends to locate near raw materials or near power resources. Measured by value of output and influence on exports, the manufacture of forest products makes up the most important industrial group. These industries assume their greatest importance around the Oslo Fiord. Sawmills, pulp mills or paper mills are located near the mouth of every large stream in this section. This is the chief forest center of the country, and the streams provide power. They are also well adapted for floating the logs to the mills, which are usually located at the mouths of the rivers.

**Electro-chemical Industries.**—Norway was the first nation to produce synthetic nitrogen on a commercial scale. Today saltpeter, carbide, sodium nitrate, ammonium nitrate and cyanamide are all produced in quantities equal to or in excess of domestic demands. These industries were in part called into being by the demand for fertilizers, although during the nineteenth century the production of matches was the leading chemical industry. The electro-chemical and electro-metal-lurgical industries have increased rapidly within recent years, and have assumed major importance. They naturally tend to locate around the

TABLE 63  
PER CAPITA PRODUCTION OF ELECTRICITY  
OF THE LEADING NATIONS, 1929  
(kilowatt hours)

(U. S. Department of Commerce)	
Nation	Kilowatt Hours
Norway . . . . .	3013
Canada . . . . .	1839
Switzerland . . . . .	1319
United States . . . . .	1019
Sweden . . . . .	817
Belgium . . . . .	557
Germany . . . . .	453

larger waterfalls in the southern part of the country. The electro-chemical industries today use nearly half the total water power developed in Norway, and are steadily increasing in importance. The electro-metal-lurgical industries are also becoming more important. In one of these, the manufacture of aluminum, Norway ranks fourth among the European powers.

#### COMMERCE AND TRANSPORTATION

The long irregular coast line, the many fine harbors, the difficulty of land transportation, and the experience in navigation gained in the



This mountain road in western Norway illustrates something of the difficulties of transportation in that rugged region. (Courtesy of the Norwegian Government Railways.)

fishing industry, caused the Norwegians to take an early interest in maritime commerce. Shortly after the beginning of the Christian Era, ships from this region were trading with the Romans, and they even secured trade from the Caliph of Bagdad. Later the Vikings sailed, to trade or fight, as far south as the Mediterranean, and westward, by way of Iceland and Greenland, to the shores of America. As the population increased it became necessary to import foods and many other products, and to send out exports in exchange. Thus the interest in

trade increased, and commerce is today one of the principal activities of the country.

The position which this small nation has achieved in world commerce is shown by the fact that it has a merchant marine which ranks fifth in the world, and surpasses that of such active nations as France and Italy. Its position is even more noteworthy in per capita tonnage, in which it far exceeds all other countries. Only a small portion of this merchant marine is needed for Norwegian trade, the remainder being used to carry the goods of other nations. The earnings of these ships are an important item of the national income, and help to balance the normal excess of imports over exports.

TABLE 64  
NORWEGIAN EXPORTS, PERCENTAGE OF  
TOTAL  
(U. S. Department of Commerce)

Type of Export	Average, 1926-1929
Pulp and paper.....	26.5
Fishery products.....	24.6
Minerals and metals.....	20.4
Forestry products.....	6.0
Agricultural products.....	4.2
Textiles.....	.6
Other industrial products.....	16.1
Foreign goods.....	1.6

In addition to carrying on international commerce, ships are used extensively in domestic trade. The extremely rugged relief of Norway makes the cost of the construction and maintenance of roads and railroads very high. The cities of the west coast have only limited rail communication with the interior, Trondheim and Bergen being the only ones connected with Oslo by rail. Moreover, these west coast cities are not connected with one another by either road or railroad. This means that most passenger and freight traffic between different coastal cities

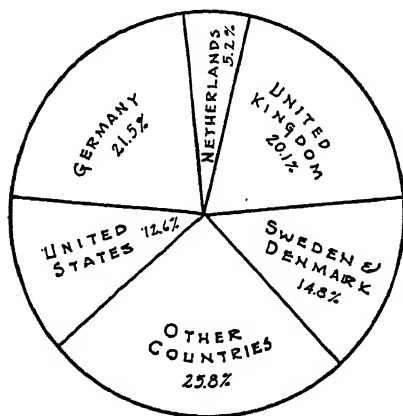
TABLE 65  
NORWEGIAN IMPORTS, PERCENTAGE OF  
TOTAL  
(U. S. Department of Commerce)

Type of Import	Average, 1926-1929
Raw materials.....	37.2
Foods, beverages and tobacco.....	24.8
Wearing apparel.....	12.9
Ships.....	10.2
Machinery.....	8.7
Other consumption goods.....	6.2

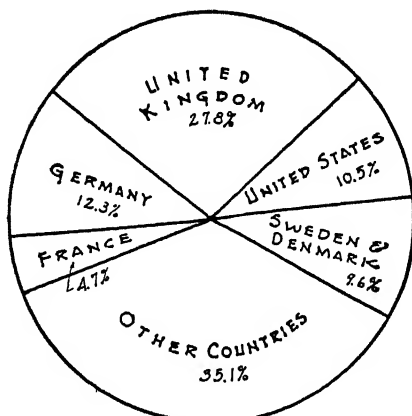


must be carried by water, and this has led to the development of an excellent system of express steamers for coastal trade.

**Foreign Trade.**—In per capita foreign trade Norway ranks among the leading nations of the world. It exports the products of its forests, fisheries and electrical industries, and imports food, wearing apparel and industrial raw materials. Facing westward, Norway has always been an Atlantic power, and its political and economic relationships have been closest with the nations bordering the North Sea and



Sources of Norwegian imports; average, 1926-1930. Percentage of total imports. (U. S. Department of Commerce.)



Destinations of Norwegian exports; average, 1926-1930. Percentage of total exports. (U. S. Department of Commerce.)

the North Atlantic. This is reflected in the fact that the United Kingdom, Germany and the United States occupy the first three positions in both imports and exports. The country normally has a considerable surplus of imports over exports, as was the case in 1930 when imports exceeded exports by \$102,800,000.

### NORWEGIAN CITIES

**Oslo.**—Oslo, the capital, has a population of slightly over 250,000. It is located on the Oslo Fiord, and is in the center of the most densely populated section of the country. Surrounding it are relatively wide areas of fertile land, and the most productive forest regions of Norway. It is therefore not surprising to find it the economic as well as the political capital of the country. Although surrounded by industrial areas, it is primarily a commercial city, and normally receives about 50 per cent of the nation's imports and sends out 15 per cent of its exports.

**Bergen.**—Bergen, with a population of 97,000, ranks second in size and is the most important city on the west coast. Its excellent and beautiful harbor and central location on the coast have made it a commercial center since the days of the Hanseatic League. It is also the center of a rapidly increasing industrial area which depends upon the large amounts of available water power.

**Trondheim.**—Trondheim, which lies at the northern end of a depression beginning at Oslo, is third in size. It has the advantage of being connected with both Oslo and Stockholm by rail. Nearby are copper and pyrites mines, and it is the center of an important forest area. This city is also one of the most important fishing ports of Norway, and commercially it is especially noteworthy for its exports of fish, lumber, pulp and paper.

#### SVABARD (SPITSBERGEN)

Although it has been a great exporter of men, and although its sons have at times seized important sections of land, Norway built up no colonial empire. It was not until 1919 that it really had a colony. At that time the Allied and Associated Powers gave it Svalbard, which includes Spitsbergen and a few surrounding islands and which, prior to that time, had not been assigned to any nation. These islands lie some 400 miles north of the northern tip of Norway, and have an area about twice that of Belgium. Although their northern shores are within the summer limit of the Arctic ice pack, their southern harbors are open for about four months each year. Their chief value to Norway lies in their minerals, which consist of coal, iron, copper and lead. Coal is the only one mined in any quantity and is most important to Norway, which entirely lacks this mineral. Six permanent coal mining camps have been established in Svalbard, and coal production is on the increase. At present the yearly production amounts to over 300,000 tons, all of which is exported to Norway.

#### SWEDEN (SVERIGE)

Sweden occupies the eastern slope of the peninsula, and is more fortunate than Norway in having much larger areas suitable for agriculture, and in being more richly endowed with forests and mineral wealth. Like the Norwegians, the Swedes have made excellent use of their opportunities, and have been active in all phases of modern life.

They have long been leaders in economic and cultural activities, and to-day constitute one of the most progressive nations of Europe.

Sweden is a large country with a small population. In size it ranks fifth among the European states, having an area of 173,143 square miles, but in 1930 it contained only 6,142,000 people. This gives it a population density of 38.6 persons per square mile, only Norway and Finland among the European states ranking below it in this respect. Some 32.2 per cent of its people reside in large towns and cities, and the rest may be classed as rural. The growth of population has been slow but steady, as is illustrated by the fact that in 1800 it contained 2,347,000; in 1850, 3,482,000; and in 1900, 5,136,000. Recently, this growth has been speeded up, due to the development of manufacturing. The rate of population increase in the future will depend largely upon the rate of industrialization, and present indications are that both will be moderately rapid.

### ECONOMIC ACTIVITY

The wide areas of level land in southern Sweden cause agriculture to engage a larger proportion of the population than is the case in Norway. Manufacturing is also slightly more important, but the nation's different location and more attractive alternative occupations make fishing and commerce less important than in its western neighbor. Differences in climate, relief and resources cause the type of economic activity to vary in different sections. The country as a whole has a well rounded economic life, and one which has led to a marked degree of prosperity.

### ECONOMIC AREAS

For a better understanding of the activities of the population, the country may be divided into four economic areas. Each of these has its own distinctive type of activity which engages the attention of the major portion of the population inhabiting it.

**The Iron Ore District.**—The first region lies between the northern border of Sweden and the Arctic Circle. This is the great iron ore region of the country. It is a very sparsely populated region and the dominant human activity is mining. For the most part it is a cold, barren mountain country where nature seems to have gone to extremes to make conditions unfavorable for man. Along the coast of the Gulf

UNIT CITIES

THE SOLID PORTION REPRESENTS KNOWN EXPOSURE IN THE UNIT CITIES BY DOWNS

SHADY PORTION = PROBABLE EXPOSURE

OPEN PORTION = POSSIBLE EXPOSURE

W LIES THAT A DOWN EXPOSURE

□ EXPOSURE OF UNKNOWN AMOUNT

SCALE

0 50 100 MILES

LONGITUDE

10° 15° 20° 25° 30° 35° 40° 45° 50° 55° 60° 65° 70° 75° 80° 85° 90° 95° 100° 105° 110° 115° 120° 125° 130° 135° 140° 145° 150° 155° 160° 165° 170° 175° 180°

10° 15° 20° 25° 30° 35° 40° 45° 50° 55° 60° 65° 70° 75° 80° 85° 90° 95° 100° 105° 110° 115° 120° 125° 130° 135° 140° 145° 150° 155° 160° 165° 170° 175° 180°

Map of the Baltic Sea region showing the Soviet Union, Poland, and surrounding countries. The map includes a legend for 'UNIT CITIES' and 'SCALE' in miles. Key cities and locations marked include Helsinki, Stockholm, Tallinn, Riga, Vilnius, and various islands. The map also shows the Baltic Sea, North Sea, and surrounding landmasses like Greenland and Iceland.

Iron ore reserves of the Scandinavian Peninsula. (U. S. Geological Survey.)

sources, one of which is of major importance to Sweden and to Europe. Here is to be found one of the largest deposits of rich iron ore in the world. Around Kiruna, Malmberget and Gällivare are located great mines which ship vast quantities of ore to Germany, Great Britain, and even the United States. The ore goes to the coast over the electrified Luleå-to-Narvik railway, one of the most northern lines of the world, and a masterpiece of engineering skill. The second resource of the region is water power, which is used as a source of power at the mines and a supply of electricity for the railway.

**The Timber Region.**—From the Arctic Circle south to the Dal River lie the great forest areas of Sweden. Here is located that magnificent stand of spruce and pine which constitutes the greatest resource of the country. Toward the west the conifers give way to birch, and in the higher elevations the vegetation changes to a tundra type, but between these highlands and the coast the forests form a green mantle covering the entire landscape. This is the country of the lumberman. The logs are cut and floated down the numerous streams to the mills which lie near the coast. Here they are turned into sawn lumber, plain



One of the swift-flowing, forest-bordered rivers of northern Sweden. (Courtesy of the Swedish-American Trade Journal, New York.)

boards, or wood pulp, and these products are shipped to all portions of the world. So important are these timber products that they make up approximately 50 per cent of the exports of the country. Although mills cluster about the mouth of every large river, Sundsvall and Härnösand are the greatest milling centers.

**The Manufacturing Center.**—From the river Dal south to the central Swedish canal system, which links the larger lakes with the North Sea and the Baltic, is the manufacturing center of Sweden. Here iron ore and water power lead to a concentration of the metal and chemical industries. Blast furnaces and steel mills cluster around the ore fields, while the waterfalls are the site of the rolling mills,

machinery manufacturing and chemical industries. Large portions of this area are forested, and the lumber industry is not unimportant. Agriculture also exists where soil and relief make conditions favorable. However, manufacturing dominates the area, and it is here that the most rapid expansion in Swedish industry has taken place.

**The Agricultural South.**—South of the canal system agriculture dominates. Except for the Småland Highlands, this area resembles the central portions of the European plain. The forests are of beech and oak, but much of the land has been cleared and is cultivated. The real agricultural centers of this region are Skane, the southernmost province, and the two plains on either side of Lake Vättern. Diversified agriculture dominates, but the crops are those adapted to the cool short summers typical of the region. The extent of pasture land and the number of cattle to be seen everywhere bear testimony to the importance of dairying and stock-raising. The farm houses are scattered through the fields, and the importance of the Swedish forests is reflected in the fact that the buildings are nearly all of frame construction.

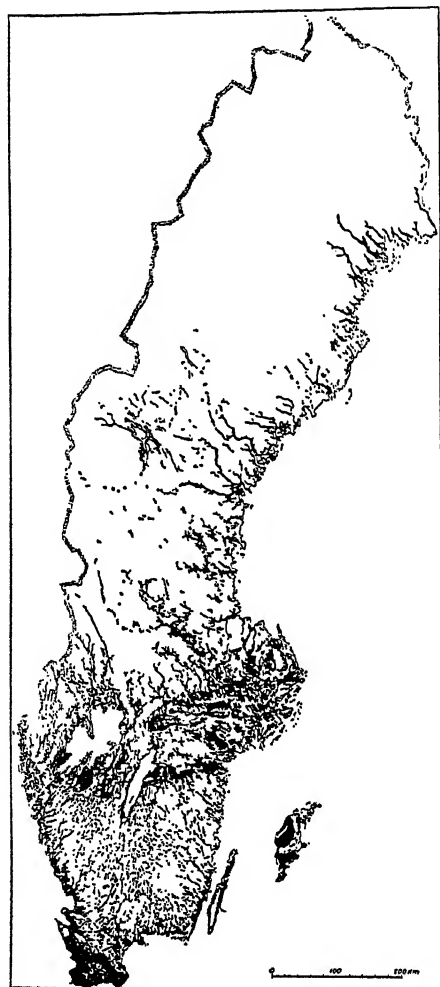
In Skane are also to be found the small coal mines of Sweden. Manufacturing is represented in textile centers of Norrköping and Borås, the match industries of Jönköping, and the shipyards of the coastal centers. Mining and manufacturing, however, occupy the attention of only a small portion of the population, and agriculture dominates.

#### AGRICULTURE

The importance of agriculture in Sweden is illustrated by the fact that 40.7 per cent of the working population is engaged in this activity. In spite of this, the country does not produce sufficient food to meet its own needs, and normally about 20 per cent of its imports consist of various food products.

**Agricultural Changes.**—Formerly the country produced a surplus of cereals, but recently there have not been enough produced to meet local demands. This is due to the fact that although acreage and production have both increased they have not increased as rapidly as population. Today Sweden produces 60 per cent of the amount of wheat it uses, 90 per cent of the rye, and sufficient barley and oats to meet domestic demands. The most notable agricultural change within recent years has been an increase in dairying and stock raising. These activities have expanded at the expense of crop production. Another change

has been an improvement in the production per acre of the various crops. This has been the result of increased cultivation of such crops as wheat, sugar beets and potatoes, of better selection of seeds, and of more scientific cultivation and fertilization. These improvements



Map of Sweden's cultivated land. (By Olof Jonasson, from *Economic Geography*, vol. I, p. 111.)

have been largely due to the excellent work of the agricultural experiment stations, the two agricultural colleges, and the various agricultural societies.

**The Location of Agriculture.**—Agriculture centers in the southern part of the country and decreases rapidly toward the north. Thus in Skane 80 per cent of the land is under cultivation, and in the

other southern lowlands approximately 40 per cent is so used. In the forest areas of central Sweden not over 15 per cent of the land is used for this purpose, while in the far north the amount drops to .5 per cent. Climate is the dominant factor in causing these differences from north to south, while locally soil and relief lead to variations.

**The Character of the Farms.**—The farms of Sweden are mostly small, and are usually worked by the owner. The average cultivated area per farm in the country is 25 acres. Throughout most sections of the country the farmer carries on diversified agriculture, but the largest acreage is always devoted to hay and forage crops. This illustrates the importance of animals, each farm keeping horses and cattle and, in the southern part of the country, swine. Dairy cattle are to be found on most farms, and are increasing in number and quality. In some sections the cattle are taken up into the high mountain pastures during the summer.

TABLE 66  
AREA AND PRODUCTION OF PRINCIPAL CROPS IN SWEDEN  
(U. S. Department of Commerce)

Crop	Area (thousands of acres)		Production (thousands of bushels, unless otherwise specified)	
	1909-1913	1926-1930	1909-1913	1926-1930
Hay.....	3,010 <sup>a</sup>	3,191	5,062 <sup>a b</sup>	4,857 <sup>b</sup>
Oats.....	1,956	1,743	86,050	83,088
Rye.....	977	719	24,101	18,698
Mixed grain.....	430 <sup>a</sup>	616	312 <sup>a b</sup>	498 <sup>b</sup>
Wheat.....	255	513	8,103	16,663
Potatoes.....	377	363	57,580	62,548
Barley.....	448	353	15,035	11,918
Forage roots.....	189 <sup>c</sup>	221 <sup>d</sup>	2,494 <sup>b c</sup>	2,989 <sup>b d</sup>
Sugar beets.....	78	76	940 <sup>b</sup>	843 <sup>b</sup>

<sup>a</sup> 1911-1915 average.

<sup>b</sup> Unit, metric ton.

<sup>c</sup> 1913.

<sup>d</sup> 1927-1930.

In central Sweden many of the farmers work in the lumber camps during the winter, thus combining agriculture and lumbering. Along the coast fishing is sometimes engaged in in the same way.

#### LUMBERING AND THE WOODWORKING INDUSTRIES

Although the output of agricultural products has increased, farming has declined steadily in relative importance during the past century,



while the exploitation of natural resources and manufacturing have gained. The increase in manufacturing has been especially rapid, and marks one of the most noteworthy changes in Swedish economic life. Sweden is rapidly becoming an important industrial nation.







The forests of Norway, Sweden and Finland. (After Zon and Sparhawk.)

**Lumbering.**—Forests constitute Sweden's most valuable resource, and cover approximately 60 per cent of the country. The hardwoods of the south are of but slight commercial importance, but the great

forests of spruce and pine which cover the central and northern portions furnish vast supplies of valuable lumber, part of which is exported and part of which is used as a raw material for important industries. The cut of the southern part of the coniferous forest belt is used largely to supply the domestic demands, while that of the central and northern sections is exported. Farther north the trees decrease in size and, although usable for pulp, are of but slight value for lumber purposes. Today the annual cut and the annual growth are approximately equal, so that in spite of extensive exploitation, the forests are not decreasing and may, in fact, be slightly increasing in size.

The numerous rivers of Sweden and the heavy snowfall typical of most parts of the country materially aid lumbering occupations. The logs are usually hauled over the snow to the streams, which are well

• EXPORTS OF WOOD PULP - 1930 • (IN THOUSANDS OF DOLLARS)				
COUNTRY	20,000	40,000	60,000	80,000
SWEDEN				
CANADA				
NORWAY				
FINLAND				

Exports of wood pulp, 1930. (U. S. Department of Commerce.)

suited for floating them to the mills. These streams also furnish valuable water power which can be used by the mills and the railways.

**Sawmills.**—Most of the lumber goes to the sawmills and planing mills, of which there are more than 1000 in Sweden. From these mills a part of the production is exported directly, and part goes to box factories, joinery and furniture factories and other woodworking plants. The exports of rough and sawed lumber and wood manufactures amounted to \$87,495,000 in 1930, and constituted slightly over one-fifth of the total exports of the country. This places Sweden high among the world's lumber exporters.

**The Pulp and Paper Industries.**—Sweden also holds an important position in the production and export of wood pulp and paper. There are slightly over 100 wood pulp factories in Sweden, which turn out approximately 14 per cent of the world's total supply of pulp, or considerably more than any other European nation. This activity is increasing in the northern part of the country where the forests are not

usable for other purposes. Nearly 70 per cent of the total production of pulp is exported, placing Sweden first among the nations of the world in this respect.

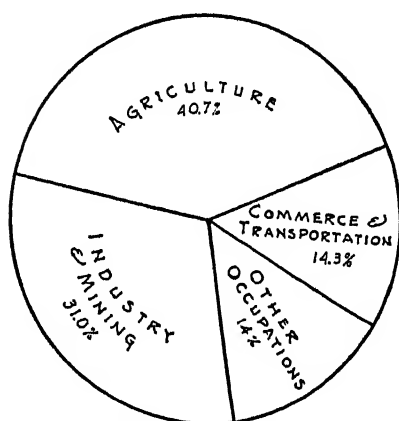
The pulp not exported goes into the manufacture of paper, and Sweden ranks third among the European powers in this activity. Over one-half of the paper manufactured is exported, and in such exports Sweden ranks second to Germany among the European powers. Today the tendency is to retain a larger proportion of the wood pulp and turn it into paper within the country, thus expanding the paper industry.

#### IRON MINING AND METAL MANUFACTURING

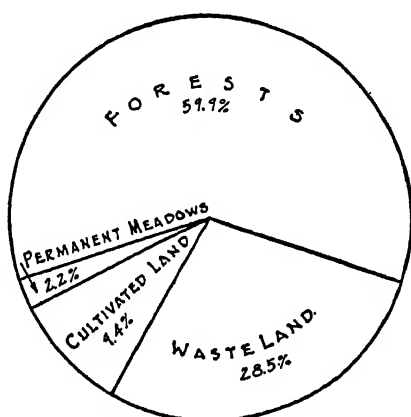
Sweden has long been important in the mining of iron ore. The deposits of central Sweden were first exploited, and today produce most of the ore used by domestic industries. Mining operations in the north did not begin until 1900, but today it far surpasses the central section in production. The high quality of the ore and its location near the surface, so that strip mining is possible, make these deposits of great value. Today Sweden ranks third in Europe in the amount of iron ore mined, furnishing nearly 6 per cent of the total world production. Approximately 80 per cent of the ore mined is exported, placing this country second in Europe and in the world in the export of this product. Increasingly large amounts are shipped to Germany, and much of the metallurgical industry of the Ruhr Valley is based on the use of Swedish iron ore. In order to conserve this resource, which ranks second in importance only to its forests, the government limits exports and has drawn up a schedule of the amounts that will be sent to the various countries.

**Iron and Steel Manufacturing.**—The manufacture of iron has long been one of the most important branches of Swedish industry. Before the use of coke as a fuel, the country occupied an important place among the world powers in this activity. Unfortunately the lack of coal made it increasingly difficult to compete with those nations which possessed this resource, and the country thus declined in relative importance until today it ranks but twelfth in Europe in the manufacture of iron and steel. It is, however, noted for its high-grade products of this metal, and is practically the only country where charcoal iron is still produced in important quantities. The steel made from this iron is of unusually high quality. Part is exported and goes into the manufacture of some of the world's finest steel products.

**The Manufacture of Machinery.**—The portion of the iron and steel used at home goes into the manufacture of various types of machinery. The machine industry did not become important until the beginning of the present century, but it has grown with great rapidity. Agricultural machinery, internal combustion engines, machine tools, metalworking and woodworking machinery, mining machinery, and machinery for pulp and paper manufacturing are but a few examples of products of this type which are produced in considerable quantities. Sweden is also noted for the manufacture of all types of electrical equipment. This country ranks second to the United States



Occupations of the gainfully employed population of Sweden. Percentage of total employed. (U. S. Department of Commerce.)



Uses of land in Sweden. Percentage of total area. (*International Yearbook of Agricultural Statistics, 1930-31.*)

in the manufacture of telephone equipment, an activity which is probably responsible for the fact that it has a larger number of telephone instruments in use per capita than any other European nation. Everywhere throughout Sweden, even in the rural districts, all kinds of electrical equipment are in general use, and their efficient and up-to-date character testifies to the progress made in the electrical industries.

#### THE CHEMICAL INDUSTRY

The chemical industry is of growing importance. Artificial fertilizers are produced and exported in considerable amounts, although they depend largely upon imported raw materials. Superphosphates are the most important type of fertilizer produced. Calcium nitrate and calcium carbide are produced by an electro-chemical process in quantities

more than sufficient to meet domestic demands. Ever since the Nobel brothers invented dynamite the manufacture of explosives has been important. The manufacture of matches is another phase of the chemical industry which is of major importance.

### WATER POWER

Sweden has small deposits of coal in the southern portion of the country, but these are able to supply only a slight percentage of its fuel needs. On the other hand, it is well equipped with abundant water power, estimated at some 8,000,000 horsepower. Approximately 1,700,000 horsepower are developed at the present time, but this amount is being increased steadily. Although three-quarters of the potential power lies north of the river Dal, the greatest development has taken place in the southern part of the country, especially along the Dal and Gota Rivers. This power is extensively used by the woodworking, mechanical and textile industries, and supplies the chief motive power for the railroads.

### TRANSPORTATION

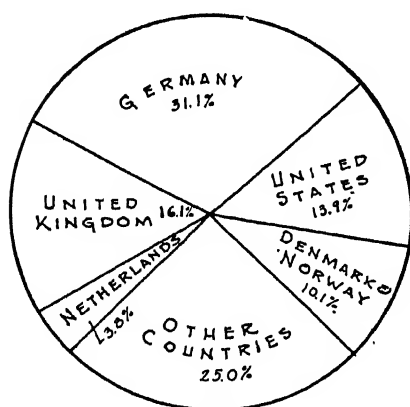
**Railroads.**—Sweden is well equipped with railroads, having a greater mileage in proportion to its population than any other European country. Stockholm and Göteborg are the greatest rail centers, and from these cities lines radiate to all sections of southern Sweden and to Oslo in Norway. Car ferries connect Malmö with Köbenhavn, and Trälleborg with Sasznitz on the German coast. Thus without changing cars one may go directly from Berlin, Hamburg or the principal Danish cities to the leading Swedish centers. An important rail line runs north along the eastern plains, connecting with the Luleå-to-Narvik line at Boden, and continuing on to Haparanda where it connects with the Finnish railroads. Nearly all of the Swedish railroads are efficiently run and, as might be expected, electricity is the principal motive power used.

**Inland Waterways.**—The leading inland waterway of Sweden is a combined canal and lake system connecting Stockholm and Göteborg. This passes through the industrial heart of the country, and is extensively used. Considerable local navigation is also carried on on Lake Vättern and Lake Vänern, which comprise a portion of this east and west route.

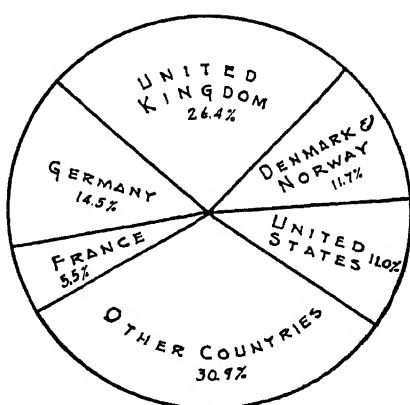
**Merchant Marine.**—Sweden's long coast line, and the fact that most trade with other countries must be carried by boat, give rise to an interest in the sea that has led to the building up of an important merchant marine. This interest has also been fostered by the people's activity in fishing, both in the Baltic and the North Sea. Fishing does not have the same relative importance as in Norway, but in the per capita value of its fisheries Sweden is surpassed only by Norway and Denmark among the European states. At present Sweden ranks seventh among the maritime nations of Europe in the gross tonnage of its merchant fleet.

## COMMERCE

Sweden carries on an active foreign trade, and one which has been steadily increasing. Normally there is a slight surplus of imports,



Sources of Swedish imports; average, 1926-1930. Percentage of total imports. (U. S. Department of Commerce.)



Destinations of Swedish exports; average, 1926-1930. Percentage of total exports. (U. S. Department of Commerce.)

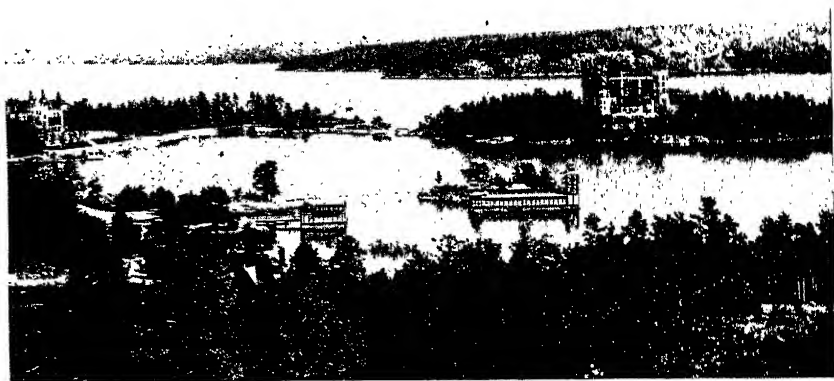
as was the case in 1930 when imports exceeded exports by \$30,518,000. As might be expected, the exports consist principally in the products of the forest and the iron mines, either in their raw state or as manufactured goods. In 1930 forest products and the products of the wood-working industries combined constituted 47 per cent of the exports of the country. Iron ore and iron and steel made up 15 per cent, and machinery and ships accounted for another 14 per cent. The exports go principally to northern or western European countries and to the United States.

The imports of the country are made up largely of foods (21 per

cent), necessary raw materials (42 per cent), and machinery and autos (16 per cent). Germany is the greatest source of imports, sending Sweden much coal and manufactured goods, although the United Kingdom and the United States also supply the country with many commodities.

### SWEDISH CITIES

**Stockholm.**—Stockholm, the capital, has a population of about 500,000, and is in many ways the most attractive city of the Scandi-



A section of the Baltic coast near Stockholm. (Courtesy of the Swedish-American Trade Journal, New York.)

navian Peninsula. Many names are applied to it, such as "The Queen of the Baltic" and "The Paris of the North," but the one which seems to fit best is "The Venice of Scandinavia." Like Venice, it is for the most part located on islands, in this case some dozen islands at the mouth of Lake Mälaren. Unlike Venice, however, it is spotlessly clean and lacks slums, at the same time being most picturesque and interesting.

The city is located on the Skerry Guard between the lake and the sea. The harbor is excellent, and the lake gives access to the interior. From here the Göta Canal gives water communication with Göteborg, while rail lines provide contact with all portions of the country. The city is also centrally located on the Baltic, and through the use of ice

breakers the harbor is kept open throughout the year. It is thus not surprising that it is an important distributing center for both domestic and Baltic commerce. Some manufacturing is carried on, but the city seems more commercial than industrial in its interests.

**Göteborg.**—Situated on the western side of the lower peninsula in such a way as best to take advantage of the North Sea and Atlantic trade, it is not surprising that Göteborg is the greatest port of Sweden. The Göta Valley connects it with the industrial heart of the country, and serves as a connecting link with the lake district and Stockholm. Its harbor is excellent and free from ice throughout the year, and its free port encourages re-export trade. It is the terminus of the principal Swedish steamship lines, and is thus connected with all portions of the world. As the North Sea countries and the United States dominate Swedish foreign trade, it is natural that much of that trade should be shipped through this port. In industrial and cultural activities it is exceeded by Stockholm, and it has only about one-half of the population of the capital.

**Malmö.**—Malmö is Sweden's third city, and has a population of approximately 120,000. Located in the extreme south, it is the chief commercial and industrial center of Skane. It is only two hours by ferry from Köbenhavn, and car ferries provide a connecting link between the railways of Sweden and those of Denmark and Germany. As is the case with both Stockholm and Göteborg, Malmö has a free port, and this tends to encourage trade. It has a number of industries, among the most important of which is the manufacture of beet sugar. Malmö is a thoroughly modern city in every way, and one which has been important in trade and fishing since the days of the Hanseatic League.

## LAPLAND

In the northern portion of the Scandinavian Peninsula are some 25,000 Lapps, who differ in race and culture from both the Swedes and the Norwegians. They are currently supposed to be members of the Finno-Ugrian racial group, and in stature are the shortest people in Europe. The Swedes in particular have treated the Lapps wisely. They have not been beggared or forced to conform to Swedish civilization, but have been encouraged to retain their own culture, and their educational system is molded with this idea in mind.

The Lapps are primarily inhabitants of the tundra, although occasionally they come down into the forest areas. The majority depend



for a livelihood upon herds of reindeer. Many live a nomadic existence, following the herds in search of fresh pasture. Today, however, large numbers have permanent dwellings to which they return in the winter. In the summer they move to the higher elevations, following the retreating snow line, for here are to be found tender food for the herds, and freedom from that pest of the north, the mosquito.

These people pay little attention to national boundaries, moving between Norway, Sweden, Finland and Russia. Their migrations back and forth across these frontiers have necessitated special treaties to provide for these movements.

Their contribution to the life of the peninsula consists in using lands, which would otherwise be unproductive, to produce meat and hides for the use of their southern neighbors. When they give up their nomadic life and become permanent settlers they usually keep a few animals. However, they live a backward life, being unable to compete with the Norwegians, Swedes or Finns in settled agriculture.

### BIBLIOGRAPHY

- Appleton, J. B., and Mitchell, S., "The Forests and Lumber Industries of Sweden," *Bulletin of the Geographical Society of Philadelphia*, 1932, vol. 30, pp. 163-181.
- Bengston, N. A., "Norway; A Commercial and Industrial Handbook," *Special Agents Series No. 196*, U. S. Department of Commerce, Washington, 1920.
- "Economic Geography of Norway," *Journal of Geography*, 1925, vol. 24, pp. 243-259.
- Bergsmark, D. R., "The Geography of Norway," *Bulletin of the Geographical Society of Philadelphia*, 1929, vol. 27, pp. 283-300.
- Bjanes, O. T., *Norwegian Agriculture*, J. W. Cappelen's Forlag, Oslo, 1926.
- Branom, F. K., "The Scandinavian Peninsula," *Journal of Geography*, 1925, vol. 24, pp. 42-65.
- Brown, R. N. R., "Recent Developments in Spitsbergen," *Scottish Geographical Magazine*, 1920, vol. 36, pp. 111-116.
- Daugherty, W. T., "Chemical Industries and Trade of Norway and Denmark," *Trade Information Bulletin No. 780*, U. S. Department of Commerce, Washington, 1931.
- Forsmark, L., and Lijon, J. (eds.), *Stockholm, Its Commerce and Industry*, Centraltryckeriet, Stockholm, 1928.
- Great Britain, Department of Overseas Trade, *Report on the Economic, Commercial and Industrial Situation of Sweden*, H. M. S. O., London, 1928.
- Guinchard, J. (ed.), *Sweden: Historical and Statistical Handbook*, Government Printing Office, Stockholm, 1914, 2 vols.

- Hansen, F. V., "The Power Resources of Sweden" (translation), World Power Conference, London, 1924, vol. 1, pp. 1321-1349.
- Jernkontoret (ed.), *Iron and Steel in Sweden*, Aktiebolaget Svenska Teknologföreningens Förlag, Stockholm, 1920.
- Jonasson, O., "The Relation Between the Distribution of Population and Cultivated Land in the Scandinavian Countries," *Economic Geography*, 1925, vol. 1, pp. 108-125.
- Kekich, E., "Forestry in Sweden," *Trade Promotion Series No. 56*, U. S. Department of Commerce, Washington, 1927.
- Kindal, A. (ed.), *The Norway Yearbook—1931*, Sverre Mortensen Förlag, Oslo, 1931.
- Kloumann, S., "Economic Survey of Norway's Water Power With a View to Its National Economic Importance and Possible Future Importance to European Industry" (translation), World Power Conference, London, 1924, vol. 1, pp. 1041-1067.
- Kristensen, I., "Water Power Resources of Norway," World Power Conference, London, 1924, vol. 1, pp. 1068-1078.
- Oxholm, A. H., "Forest Resources, Lumber Industry, and Lumber Export Trade of Norway," *Special Agents Series No. 211*, U. S. Department of Commerce, Washington, 1922.
- "Swedish Forests, Lumber Industry and Lumber Export Trade," *Special Agents Series No. 195*, U. S. Department of Commerce, Washington, 1921.
- The Swedish Wood Exporters Association (ed.), *Sweden as a Producer of Wood Goods, Pulp, Paper, Tar and Other Forest Products*, Svenska Teknologföreningens Förlag, Stockholm, 1920.
- The Swedish Yearbook—1931*, Almquist & Wiksells Co., Stockholm, 1931.
- Vallaux, C., "The Maritime and Rural Life of Norway," *Geographical Review*, 1924, vol. 14, pp. 505-518.
- Wiklund, K. B., "The Lapps in Sweden," *Geographical Review*, 1923, vol. 13, pp. 223-242.

## THE BRITISH ISLES

FOR centuries sea power has constituted the foundation of Britain's greatness. Due to the strength of her navy, no conqueror has set foot on British soil since the days of the Norman Conquest. This freedom from outside interference permitted political and economic evolution to proceed more rapidly than among the more exposed continental powers. Control of the sea lanes likewise made possible the transfer of armies and colonists to foreign shores, until one-quarter of the lands and peoples of the earth were brought under the British flag. It also kept the ocean highways open to that vast swarm of merchant ships which bring to the crowded population of Britain essential foods and raw materials. Truly Britain's destiny has been upon the sea, and sea power has been essential to her very existence.

Freed from the threat of invasion, the British early turned their attention to economic progress and were pioneers in industrial advance. Such inventions as the steam engine and the spinning jenny, together with the effective use of their natural resources, enabled them to precede all others in the development of modern industrial organization. Under capable leadership this organization grew rapidly, until Britain became a leader in many phases of manufacturing. Unfortunately, however, the resources of the island were too limited to supply the demands of the British factories or the rapidly expanding population. As a consequence, a mighty merchant marine was constructed, to bring to the great industrial centers a constant stream of foods and raw materials from every portion of the world. In return these ships carried the products of the nation's factories to every land and to every people. Thus Britain became the greatest of the world's commercial nations, and exceeded all others in merchant tonnage. This vast and delicate economic organization depended on the free movement of goods, and made imperative British control of the seas.

Cultural and political progress kept pace with economic advance. Leaders in the cultural fields were so numerous that it has frequently been said that during the last century these islands produced more famous men in proportion to their population than any other region

of equal size throughout the world. British statesmen have also enjoyed an enviable reputation, and have caused the nation to be admired and respected in the fields of national and international politics. No small part of this cultural and political progress has been due to the freedom from outside interference made possible by the might of the British navy.

Since the World War Britain has suffered a great decline in economic activity. As a consequence, it is frequently prophesied that she will never again recover her former importance, but will continue her downward path. In order to test the accuracy of this estimate, it is necessary to have a complete knowledge of the geography of the islands.

### POPULATION

**The Character of the Population.**—Since prehistoric times the British Isles have contained a very mixed population. This has been

OCCUPATIONS OF THE GAINFULLY EMPLOYED POPULATION—PERCENTAGE OF TOTAL					
U. S. DEPARTMENT OF COMMERCE					
OCCUPATION	COUNTRY	10%	20%	30%	40%
AGRICULTURE	GREAT BRITAIN	<div></div>			
	ENGLAND / WALES	<div></div>			
MINING / QUARRYING	GREAT BRITAIN	<div></div>			
	ENGLAND / WALES	<div></div>			
MANUFACTURING	GREAT BRITAIN	<div></div>	<div></div>	<div></div>	<div></div>
	ENGLAND / WALES	<div></div>	<div></div>	<div></div>	<div></div>
TRADE	GREAT BRITAIN	<div></div>			
	ENGLAND / WALES	<div></div>			
TRANSPORTATION AND COMMUNICATION	GREAT BRITAIN	<div></div>			
	ENGLAND / WALES	<div></div>			
PROFESSIONS	GREAT BRITAIN	<div></div>			
	ENGLAND / WALES	<div></div>			
DOMESTIC AND PERSONAL SERVICE	GREAT BRITAIN	<div></div>			
	ENGLAND / WALES	<div></div>			
ALL OTHERS	GREAT BRITAIN	<div></div>			
	ENGLAND / WALES	<div></div>			

Occupations of the gainfully employed population of Great Britain. Percentage of total employed. (U. S. Department of Commerce.)

especially true of England, and scarcely less true of northern Ireland and the lowlands of Scotland. The earliest group of which there are any present traces seem to have been the Picts. These people were either absorbed or driven into the more remote districts by the Celtic invaders. Later still came the invasions of such Teutonic peoples as the Saxons, Angles, Norse, Danes and Normans. These in turn either absorbed the Celts or drove them into the less accessible districts. To-

day Celtic populations predominate in the highlands of Scotland and Wales and in much of the Irish Free State, while most of England, the lowlands of Scotland and northern Ireland are inhabited by Teutonic peoples.

The present population is a fusion of these various groups, and has profited by the ethnic and cultural contributions of each. These people have shown marked ability in nearly every phase of human endeavor, and have displayed unusual tenacity in achieving their goals. Their insular location has permitted them to amalgamate, and to develop a distinct culture, largely unhindered by outside interruption.

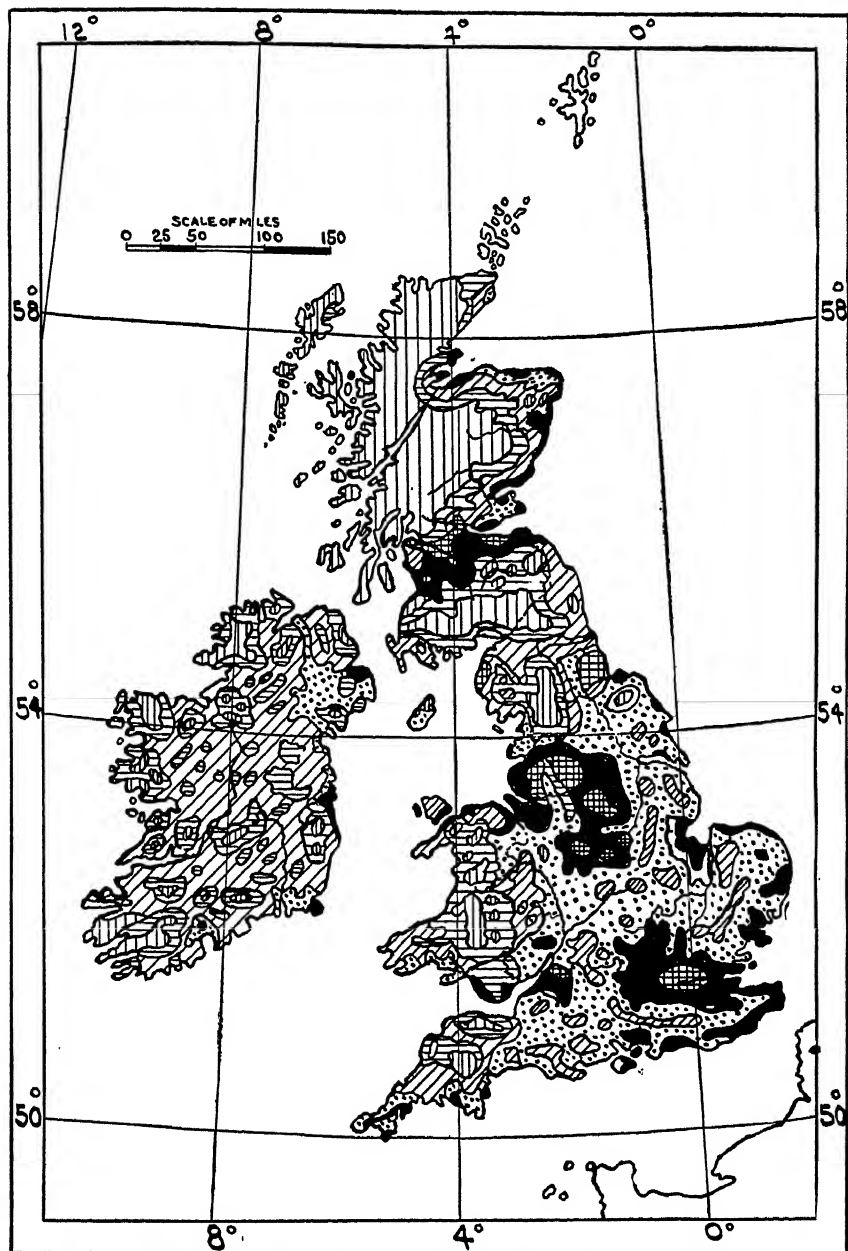
TABLE 67

AREA AND POPULATION OF MAJOR DIVISIONS OF THE BRITISH ISLES, 1931  
(U. S. Department of Commerce)

Division	Area in Square Miles	Population	Density per Square Mile
England.....	50,874	37,354,917	742
Wales.....	7,466	2,593,014	323
Scotland.....	30,405	4,842,554	159
Northern Ireland (1926).....	5,237	1,256,561	240
Isle of Man.....	221	49,338	223
Channel Islands.....	75	93,061	1,241
Total United Kingdom.....	94,278	46,189,445	490
Irish Free State (1930).....	26,601	2,945,000	111

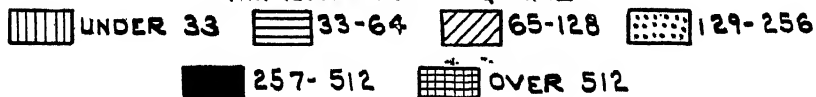
**Historical Changes in the Distribution of Population.**—Since 1800 the population of Great Britain has been characterized by its very rapid increase in size, and by the numerous changes which have taken place in its distribution. The increase in population has not been uniform in all sections of the islands. It has been very rapid in England and Wales, and gradual in Scotland, while in Ireland the population has actually declined rather rapidly. During the past century the population of England and Wales has nearly quadrupled, and the same rate of increase has continued during the first quarter of the present century.

There have been three types of population movements which have been important. The first movement was from the rural districts to the towns and cities, and accompanied the rapid industrialization of the country. The second was the shift of the population in England from the south to the north. The decline of agriculture and the rise of industrial centers near the coal fields were responsible for this shift. Recently a counter movement has set in, due to increased industrial activity in the south. The third movement of importance was the emigration of



# BRITISH ISLES-DENSITY OF POPULATION

INHABITANTS TO SQ. MILE



The distribution of population in the British Isles.

large numbers from the British Isles to areas overseas. It is estimated that between 15,000,000 and 20,000,000 have so emigrated since the beginning of colonization. This emigration, by removing many of the most capable and active of each generation, has doubtless had an adverse influence on the general level of ability of the remaining population. These three movements have had a most marked effect upon the distribution of population, and upon living conditions throughout the British Isles.

**The Present Distribution of Population.**—England is the most densely settled portion of the British Isles, and is closely followed in this respect by Wales. The unfavorable environment of much of Scotland is reflected in a relatively low density of population. An unfavorable environment also reacts to the disadvantage of the Irish Free State, which is the most sparsely populated section of the British Isles. Altogether, the islands are densely populated, but in spite of this they maintain a higher standard of living than any other European country.

Most of the population of England is concentrated in the industrial areas near the coal fields, and in London and the adjacent agricultural and industrial areas of the southeast. Three-fourths of the population of Scotland is to be found in the central lowlands, where conditions are favorable for agriculture and manufacturing. Ireland remains largely agricultural, and the population is consequently more uniformly distributed than in Great Britain. However, Dublin and Belfast are local centers around which population tends to concentrate.

The United Kingdom is primarily a land of cities, approximately 80 per cent of its population residing in urban centers. The Irish Free State, on the other hand, has only 30.4 per cent of its population living in towns and cities of over 2000.

#### SIZE AND SITUATION

**Size.**—The British Isles consist of a number of islands lying off the northwest coast of continental Europe. They have a total area of 121,214 square miles, or approximately the same as the four states of New York, Pennsylvania, New Jersey and Maryland combined. However, the only two islands of major importance are Great Britain and Ireland, which have areas of 88,945 square miles and 32,173 square miles, respectively. The stage upon which the achievements outlined above took place is thus small, and its world importance is out of all proportion to its size.

The population of the islands is quite large, totaling today approximately 49,000,000, or about the same as New England, the Middle Atlantic States, the South Atlantic States and Alabama combined. The population density is thus very great, a condition which tends to complicate the problems of employment and food supply.

**Situation.**—These islands are situated nearly at the exact center of the land areas of the earth. In other words, if the earth is divided into land and water hemispheres, it will be found that the British Isles lie at the center of the land hemisphere. This factor has aided their contacts with other portions of the earth. It has encouraged trade, made political relationships easier, and fostered cultural exchanges.

The position of the islands with relation to the continent of Europe has also been important. When European civilization centered in the Mediterranean they were on the margin of civilization, but when the center shifted northward they became the focal point toward which cultural and economic activities were attracted. While separated from the continent, and thus removed from the dangers of invasion, they were yet near enough to absorb the cultural and economic contributions which the continent had to offer. Opposite Dover, across the narrowest portion of the dividing sea, is the meeting place of the two great cultural and linguistic groups of western Europe, namely, the Teutonic and the Latin peoples. From each of these Britain has drawn important contributions, and in turn has given valuable contributions to each.

Economically also the islands are well situated. Across the narrow seas lie the most productive parts of the continent. This productivity has fostered trade. Even the relief of the continent works toward the same end, for the more important rivers which drain these productive regions flow to the North Sea, and naturally lead trade toward Britain. It is also not surprising that an important exchange of products between the continent and the productive regions across the Atlantic has benefited Britain, for, of necessity, it has to pass by her dooryard, thus adding to her contacts with other areas.

The position of the islands with relation to the surrounding ocean and seas is also of major importance. To the north and the west lies the Atlantic, the greatest ocean of commerce, and the one which exercises such a profound influence over the climate of Europe. The westerly winds carry the moisture and the moderating influence of the ocean over the islands and give them a remarkably favorable climate.

To the east and the south the North Sea, the Straits of Dover and the English Channel separate the islands from the continent. As has



been seen, they serve as both a protection and an avenue of communication. The cool, shallow waters of these seas contain a great abundance and variety of fish, and this encouraged many inhabitants of the east coast to engage in fishing. These fishing banks provided training grounds for British sailors, and from them seamen were drawn to man the British fleet and merchant marine.

Location has thus played a prominent part in the human development of the British Isles. They are continental islands, with all the characteristics of such regions. Insular and yet not isolated, protected and yet placed within close contact with every section of the world, located far north and yet with a moderate climate, they are ideally situated to support an advanced civilization.

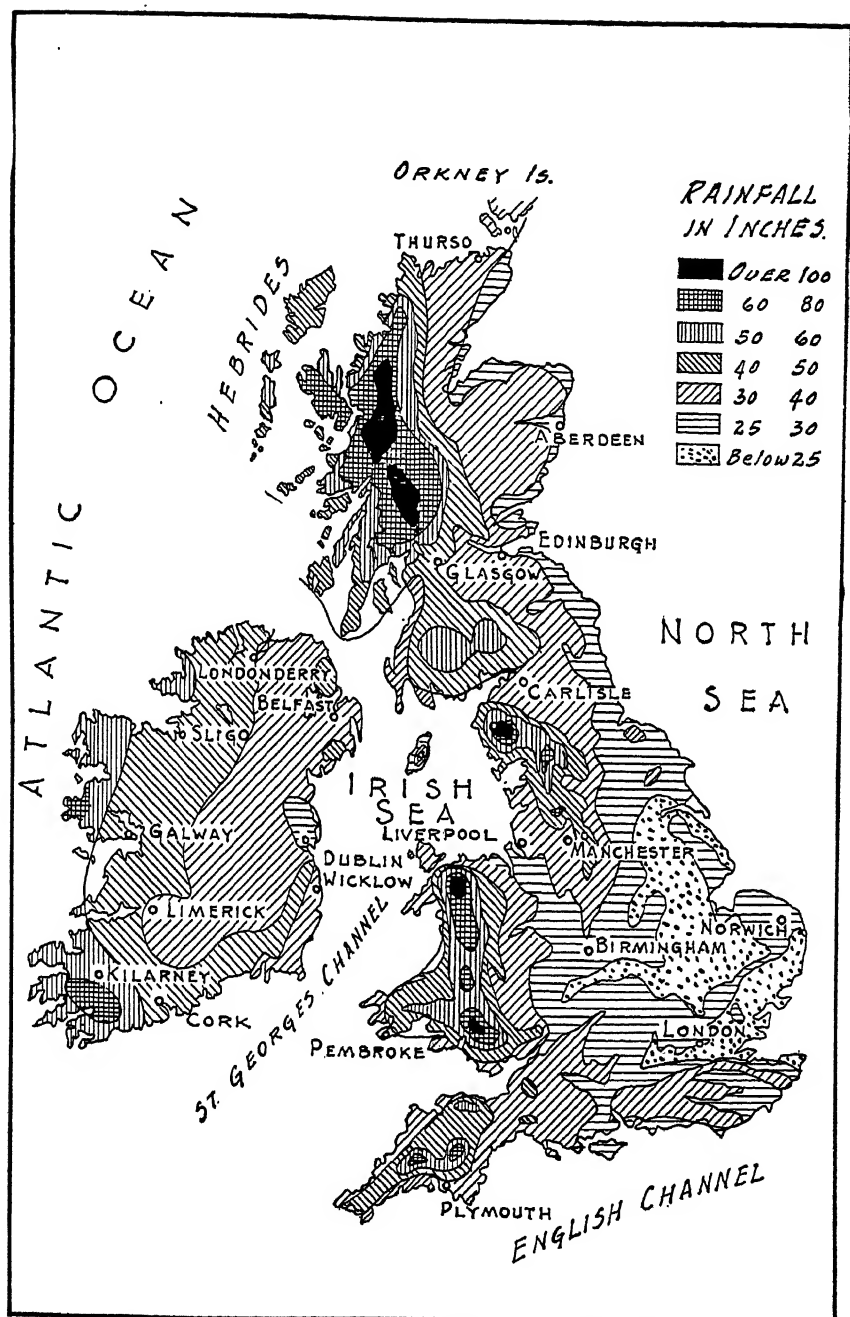
### CLIMATE

High latitudes and an island location give Great Britain a moist, marine climate. It is excellent from the point of view of human health and energy, and is well suited for many of the most valuable domestic animals. However, it decidedly limits the crops that can be raised, especially in the western portions of the island.

**Rainfall.**—Rainfall varies from west to east and in accordance with elevation. It is greatest in the highlands bordering the west coast. Many portions of northwestern Scotland, southwestern Ireland, Wales, and the Devonian Peninsula receive over 80 inches per year. This is excellent for grass growth, but too great for most cultivated crops. Precipitation diminishes toward the east, averaging only about 25 inches around London, and slightly less than that in a small area around the Wash. This is ample for agricultural needs, and makes possible the growth of a variety of crops.

The seasonal distribution of rainfall also varies in different portions of the island. In the west there is rain at all seasons, with a winter maximum. In the east central and eastern parts of Great Britain the maximum comes during the summer. This is the period when it is most needed by crops and therefore adds to the agricultural value of this region.

The climate is also characterized by much cloudy weather and frequent fogs. This is especially true in the west. Even in central and eastern England, where the sun is obscured less than in other sections, there is sunshine only slightly more than 30 per cent of the time possible. The greater amount of sunshine in the central and eastern sections makes these regions best suited for agriculture.



Average annual rainfall of the British Isles. (After Lyde.)

**Temperature.**—The influence of the ocean is especially marked in the temperature. In spite of the fact that most of the islands lie in approximately the same latitude as Labrador, no portion of them has an average January temperature below 39 degrees Fahrenheit, nor does the average for the warmest months exceed 65 degrees Fahrenheit. Thus the temperature is remarkably mild and stable, due to the moderating influence of the ocean and the North Atlantic Drift.

Seasonal variations in temperature are less in the west but increase toward the east. In southwestern Ireland they amount to only some 14 degrees Fahrenheit, while around London the variations increase to approximately 24 degrees Fahrenheit.

Temperature decreases rapidly with elevation, thus limiting the possibilities of agriculture in the mountainous sections. Cultivation is seldom found above the 1000-foot contour, the upper slopes being used for grazing, if at all.

**Variability.**—The frequent storms which pass across the British Isles provide that variability of weather which is so important to human health and energy. Lying in the belt of prevailing westerlies, and consequently in the path of cyclonic and anti-cyclonic storms, these islands are subjected to conditions of temperature, humidity and wind which vary with great rapidity. This is especially true in the winter when, due to the influence of the expanded Icelandic low-pressure area, the British Isles lie within the path of a constant succession of storms. The frequency of these variations provides a climate which is not always pleasant but which is healthful and energizing.

**The Influence of Climate on Man.**—The British Isles have a climate which probably comes as near to the human optimum as any upon the earth's surface. The moderate temperatures promote health and encourage mental activity. The variability so characteristic of this climate has a similar influence. The relatively high humidity is also beneficial to health. The combination of these factors makes the British Isles an unusually favorable home for man.

**The Influence of Climate on Vegetation.**—Climate influences not only the types of natural vegetation, but also the kinds of crops that can be profitably raised. The moist and moderately cool climate to be found throughout most of the islands makes grass the most characteristic type of vegetation and the one best suited to the climate. Accordingly, the raising of livestock is one of the most important phases of agriculture.

The islands may be divided into three vegetation zones which are closely related to the climate. The lowlands of the east and the

southeast are for the most part devoted to the raising of cereals, except where soil or drainage interferes. Due to heavy rainfall, the lowlands of the west and the north are mostly grass covered and used for pastoral pursuits. Oats is the only grain raised in any quantity. The uplands of the north and west are forested in places, but for the most part they are clothed with moor and bog, and are of but slight use to man. The heavy rainfall and cooler temperatures of the higher elevations are in part responsible for this condition, but part of the responsibility must rest on man, who removed much of the original forest growth.

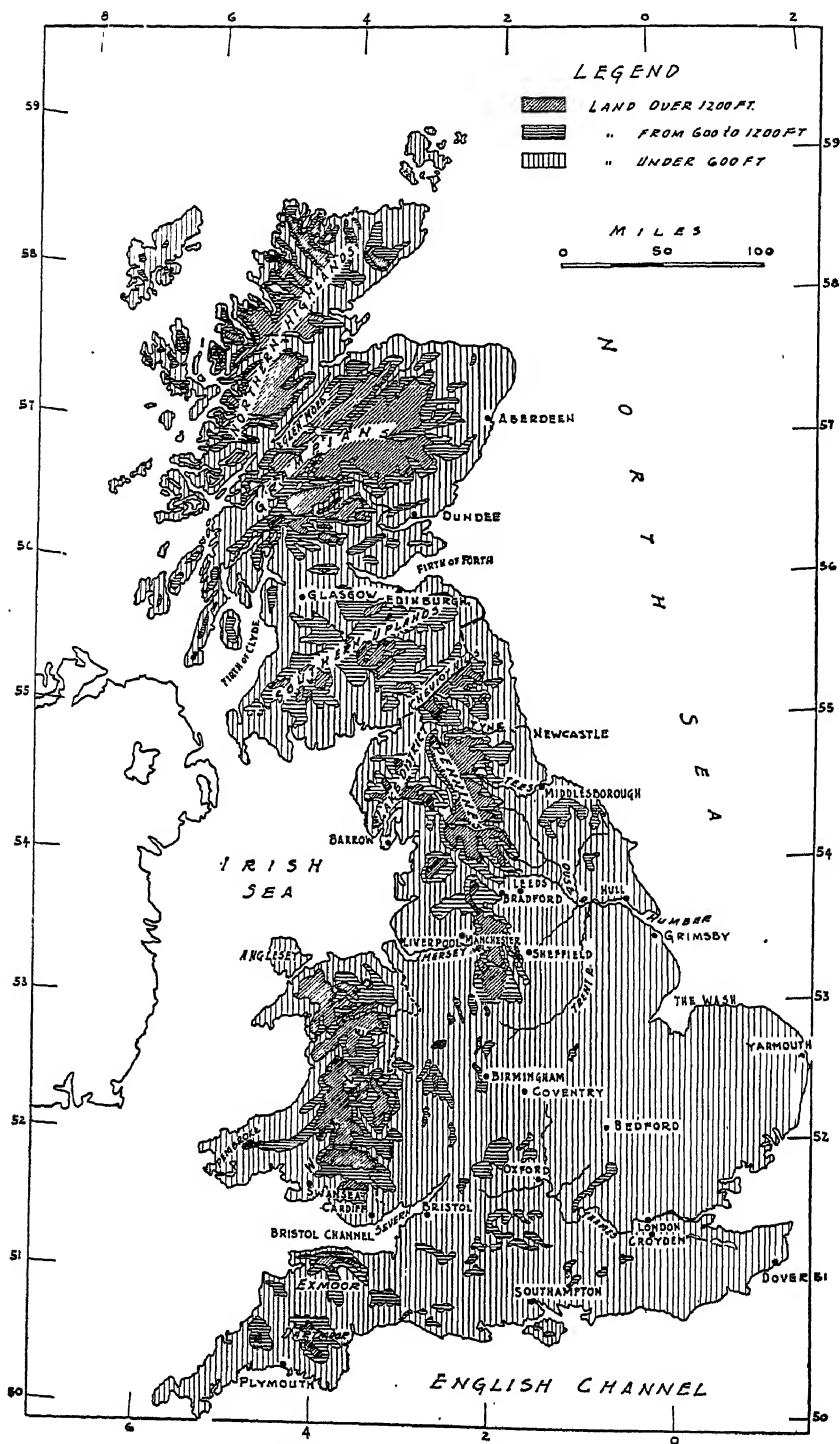
### GEOGRAPHICAL REGIONS

To understand the relief of the British Isles, it must be remembered that they were formerly joined to the European mainland, and that the North Sea and the English Channel are merely slightly submerged portions of the continental platform. Consequently the major relief features of the continent extend westward and are represented in Great Britain and Ireland.

It must also be remembered that during the last glacial epoch all of the islands were covered with ice except that portion of England lying south of the line connecting the mouth of the Tames with Bristol Channel. North of this line soil and relief have been decidedly modified by the ice.

### THE SCOTTISH HIGHLANDS

The Caledonian Fold is represented in the islands by the Scottish Highlands and the highlands of northern Ireland. As might be expected, these sections closely resemble the Scandinavian Peninsula in relief and structure. They are a rugged mass of old crystalline rock dissected by erosive forces. They are divided into two sections by the straight, narrow valley of Glenmore. North and west of this valley lie the northern highlands, while south and east of it are the Grampians, the highest uplands of the British Isles. Here Ben Nevis and Ben Macdui tower to elevations of 4400 and 4300 feet, although the average height of the uplands as a whole ranges between 2000 and 3000 feet. Glenmore itself is of interest because its lakes are connected by the Caledonian Canal, which links the North Sea with the Atlantic.



Relief map of Great Britain.

The Scottish Highlands consist of rocky slopes, the upper portions of which are bare; the lower slopes are covered with heather and other moor growth. The valleys are usually steep-sided, while the more level areas contain frequent bogs. The old hard rocks of which they are composed, combined with a cool, moist climate, lead to soils which are unsuited for cultivation except where mixed by glacial action. Thus the area is poorly suited for the raising of crops, and even good pasturage is largely lacking. The chief value of these highlands at present seems to be as game preserves. They are also pic-



Scottish cattle at Loch Lubnaig, in the Highlands. (Courtesy of the London, Midland and Scottish Corp.)

turesque and in places beautiful, thus laying the basis for a tourist industry. Considering their slight economic value, it is not surprising that they support a sparse and declining population.

The eastern and western coasts of these highlands present some interesting contrasts. To the west is a rocky fiorded coast, fringed by numerous islands. In its general characteristics it closely resembles the coast of Norway. Unlike Norway, however, it lacks forests and has only limited amounts of water power. Important towns are lacking, and it supports a very sparse population. On the other hand, the eastern coast is bordered by a narrow coastal plain, and although

there are not as many harbors as on the west, they are sufficiently numerous to meet the needs of the inhabitants. The more favorable climate of the east permits the use of this coastal plain for the growth of such grains as oats and barley, and for the raising of cattle. This coast is located near important fishing grounds, and most of the ports are engaged in fishing. Aberdeen ranks high among the ports of the British Isles in this activity. The east coast thus supports most of the population of northern Scotland and contains most of the important towns.

#### THE CENTRAL SCOTTISH LOWLANDS

While the northern half of Scotland is occupied by the highlands just discussed, the southern half consists of the central lowlands and the southern uplands. These central lowlands occupy a rift valley running from east to west, and formed by parallel faults. The subsidence has preserved the sedimentary rocks from erosion, with the consequence that here are to be found coal seams and better soil than in the highlands. The extent of submergence is indicated by the fact that only thirty miles separate the Firths of Clyde and Forth, the drowned river valleys located at the western and eastern ends respectively.

Here the level land and fertile soil account for prosperous agricultural communities, while the coal measures and available harbors have favored the development of manufacturing. As a consequence, these central lowlands contain approximately three-quarters of the population of Scotland, and constitute the center of all phases of Scottish activity.

Differences in climate and the location of coal account for human differences in the eastern and western portions of the lowlands. The west has coal, and around Glasgow has grown up the greatest manufacturing district of Scotland. However, heavy rainfall largely restricts agriculture to the pasturage of animals. In the eastern end the amount of coal is insufficient to lead to a high degree of industrialization, while less rainfall encourages agriculture. Consequently oats, barley and fruits are raised extensively, and this district forms the agricultural center of the country. This eastern region is also the site of Edinburgh, the ancient capital and present cultural center of Scotland.

**Glasgow.**—The economic activity in the western portion of the lowlands has enabled Glasgow to become the leading city of Scotland and the second largest city of the British Isles. Its location near iron and coal led to its early importance as an iron and steel center, while the narrowing and deepening of the Clyde changed that stream into a navigable waterway and enabled Glasgow to become a port as well as a manufacturing city. Today it is a modern industrial center with great factories and warehouses, and miles of workers' dwellings. It represents the new industrial Scotland, in contrast to the older agricultural Scotland of the east.

**Shipbuilding.**—The Clyde is the leading shipbuilding center of the United Kingdom. This fact becomes of special significance when it is realized that the nation normally produces one-half of the ships launched throughout the world. The ports along the Tees and the Tyne are the leading competitors of the Scottish area, although Belfast in northern Ireland has been advancing rapidly in recent years. The activity of these various sections is based on the tremendous demand for vessels by the British navy and merchant marine, and upon an abundance of iron and coal, together with a large body of highly skilled labor. Because of the economy of construction along the Clyde and in other British areas, ships are built for many foreign governments and companies.

#### THE SOUTHERN UPLANDS OF SCOTLAND

The southern uplands consist of formations similar to the highlands of the north, but they differ in being less rugged and in occupying a smaller area. Their location has also materially influenced their development. To the north lie the densely populated and productive Scottish lowlands, while to the south lies England with its vast population and varied activities. Communication and trade between these areas is naturally important, and as it must cross the southern uplands, they have become a transit zone.

Like the northern highlands, they are mostly covered with moor and heath growth, although there are some local forest areas. They have poor soils, and this, combined with the heavy rainfall, limits cultivation. In places, however, they support a good growth of grass, and from early times they have been one of the important sheep-raising districts of Great Britain. Wool is responsible for the only manufacturing in these uplands.



## THE PENNINES

A southern extension of the Scottish uplands known as the Cheviot Hills lies on the border between England and Scotland. South of these hills and separated from them by the Tyne Gap, the Pennine range extends southward through north central England. These mountains differ structurally from the uplands of the north, and consist of a single large fold, the upper layers of which have been removed by erosion. The soils are mostly poor, and the natural vegetation is of little value except for grazing. Ruggedness and poor soil hamper cultivation, but here again sheep raising is an important occupation.

The Pennines are broken in the center by the Aire Gap, through which important rail lines connect southern and central England with the northwest.

These highlands are of little value and support a sparse population. However, they are bordered by coal measures and fertile plains which are the sites of the great industrial cities, and which support a dense and active population.

## THE LAKE DISTRICT

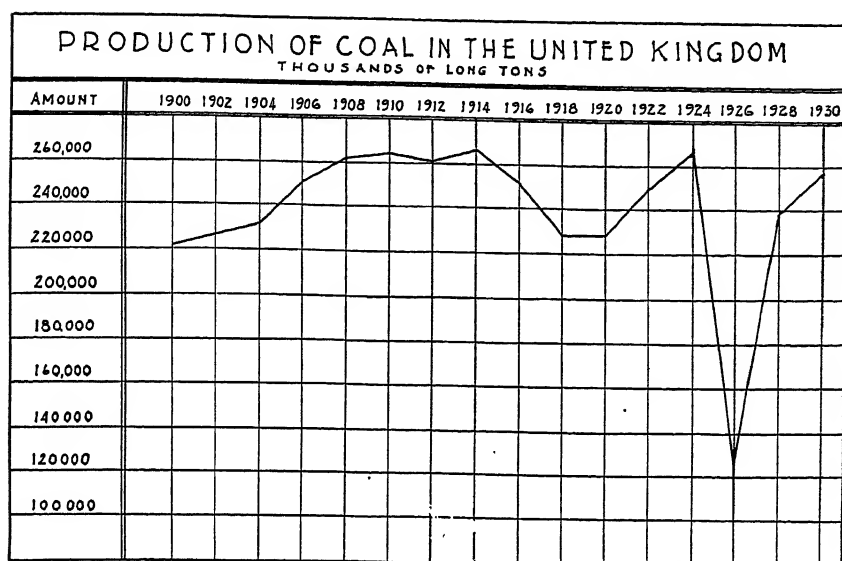
The dome-shaped elevation known as the Cumberland Highlands or the Lake District lies to the west of the northern portion of the Pennines, and was at one time connected with the Isle of Man. These uplands are the remains of volcanic mountains which have been heavily glaciated. Attractive lakes occupy many of the glacial valleys and have made this district much famed for its beauty. The extremely heavy rainfall restricts agriculture, and grazing is the only important occupation.

## THE WELSH HIGHLANDS

To the southwest of the Pennines, and separated from them by the Cheshire Gap, are the Welsh Highlands. They occupy all of Wales except for a coastal plain on the west, which is narrow in the center but widens in the north in the Llyn Peninsula and Anglesea, and in the south in the Pembroke Peninsula. The mountains resemble the Scottish uplands and are deeply dissected, making transportation difficult and limiting the amount of level land. The poor soil, combined with the heavy rainfall, retards agriculture. On the lower slopes and

on the bordering plains cattle and sheep are grazed, and oats are raised in considerable quantities.

Coal located in the southern portion of the peninsula is the only important resource. It is of excellent quality, including both anthracite and bituminous, and is exported in such large quantities that Cardiff has become the leading coal-exporting port of the British Isles. Coal



Production of coal in the United Kingdom, 1900-1930. In thousands of long tons.  
(U. S. Department of Commerce.)

has been responsible for important manufacturing regions in the south which tend to specialize in iron and steel and tin plate. This section contains the greatest concentration of people and the largest cities of Wales.

The relief of Wales was responsible for the fact that it was conquered by those in control of the English plain shortly after the Norman Conquest. On the south the plains of Glamorgan opened the way to the conquest of Pembroke. The conquest of the highlands was made easy by the fact that they are drained mostly toward the east by such rivers as the Severn, the Dee, the Wye and the Usk. The valleys of these rivers provided natural highways into almost all portions of the highlands. The only really isolated sections lay in Anglesea and the Llyn Peninsula. Here the principality of Gwyneth maintained its independence long after other sections of Wales had passed into English hands.

## THE DEVONIAN PENINSULA

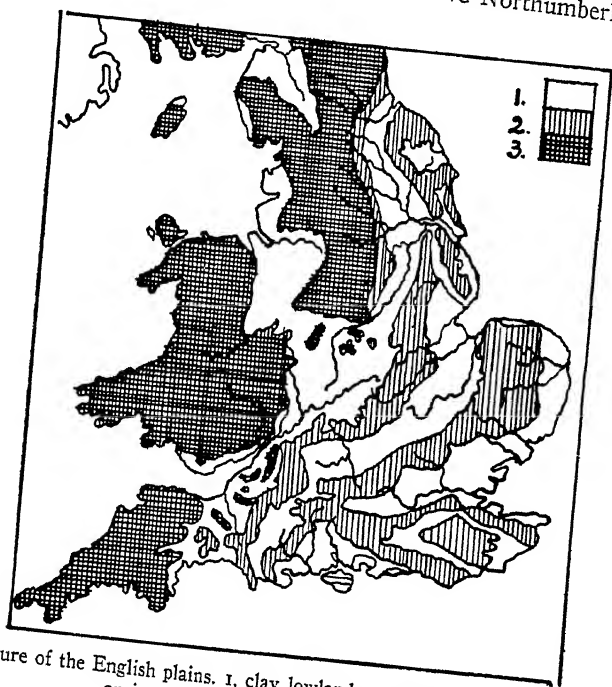
The southwestern peninsula of Great Britain consists of two belts of broken highlands running in an east and west direction. The northern belt consists of Exmoor, and is continued in the Quantocks of western Somerset, and the southern one includes Dartmoor and Bodmin Moors. These highlands have extremely heavy rainfall and poor soils, with the result that the vegetation is of a moor type, and the dominant occupation is the grazing of cattle and sheep. Between these two belts is a fertile strip of lowlands. Here dairying is well developed, and the raising of early vegetables is important. The numerous orchards of the lower slopes have made Devon one of the most important fruit districts of the British Isles. The heavy rainfall and mild temperature result in a luxuriant growth of grass and other vegetation. It is not surprising, therefore, that Devon is one of the greenest sections of England, and one of the most attractive. The peninsula has few important towns or cities. Plymouth is a port of call for some of the transatlantic liners; but in this respect it is losing much of its importance to Southampton, which lies nearer to London and the more densely populated sections of England. However, except on the moors the entire region is dotted with picturesque villages. These vie with an imposing coast line and the fame of Devonshire cream and fruit in attracting an increasingly large number of tourists each year.

## THE ENGLISH PLAINS

The English plains occupy about three-quarters of the area of England, and contain the principal economic and population centers of the islands. Here important coal fields have led to the rise of great industrial cities. Here also are to be found the most extensive areas of level and fertile land in the British Isles, with the natural result that this is the leading agricultural region. The greatest ports of Britain are located on the estuaries which indent the edges of the plains. Moreover, these plains are nearest the continent, and were the first sections to receive the cultural and economic contributions from the mainland. London, the political, cultural and economic center of the British Empire, lies in the southeastern portion of this region. Consequently, the English plains are the center of all phases of British activity, and from here British influence has been extended throughout the world.

**The Northeastern Plains.**—While the major portion of the English plains lies to the south of the Pennines, branches reach northward on either side of those highlands to include Lancashire on the west and the Yorkshire plains on the east. These northern extensions, while less fertile than the southern plains, contain some of the most important coal fields and industrial centers of Great Britain.

In the extreme northeast, and almost beyond the edge of the plains, lies an important industrial area bordering the Tyne and the Tees. This district is situated on the extensive Northumberland-Dur-



The structure of the English plains. 1, clay lowlands; 2, limestone hills; 3, uplands of ancient folded rocks. (After Newbigin.)

ham coal fields, and near the Cleveland Hills, which form the present center of British iron ore production. The presence of excellent coking coal and ore, combined with proximity to tidewater, have caused it to become the leading iron and steel center of the British Isles. Part of the products of its mills and furnaces are shipped south to be turned into finished goods in the factories of Sheffield and Birmingham, while part are retained and used in the production of such bulky products as rails, armor plate and ships. It is the presence of such abundant supplies of iron and steel near the coast that has enabled the Tyne and Tees to rank second only to the Clyde as centers of British shipbuilding.

Large amounts of iron and steel products are exported through such ports as Middlesbrough, South Shields and Newcastle. The last-named ranks second only to Cardiff as a coal-exporting port, due to the presence of abundant supplies of this fuel in close proximity to tidewater. The northeastern plain is thus a region scarred with shafts of many coal mines, bathed with the smoke of a thousand furnaces, and deafened with the din of innumerable factories. Here industry is supreme, and all other occupations are of slight importance.

**The Yorkshire Plains.**—Sheep raising on the Pennine slopes is an ancient occupation. Originally the wool was shipped to Flanders to be woven into cloth, but with the migration of the Flemish weavers to eastern Britain, an important textile industry developed in the Yorkshire plains. It was based on the presence of skilled weavers, large amounts of wool from the Pennines, excellent water for washing wool, and large local deposits of coal. The industry grew rapidly, and Yorkshire was the leading textile center of Britain until the rise of the cotton industry at the beginning of the last century. It has remained the great center of the British woolen industry, in spite of the fact that at present much of the raw wool has to be imported through London. Leeds and Bradford are the greatest centers of this industry and each tends to specialize on a different phase of it. Leeds is noted for its wide variety of woolen goods, while Bradford is the center of wool combing and the great producer of worsted fabrics.

This district has other elements of importance besides the manufacture of wool. The Yorkshire-Nottingham field is the greatest producer of coal in Britain. Part of this fuel goes to produce power for the woolen industry, and part is used by the steel and hardware industries centering around Sheffield. This city is one of the oldest steel centers of Britain. In addition to having the advantage of nearby coal, it is close to the iron ores of Lincoln, and has local supplies of limestone, crucible clays and fine grinding stone. Distance from the sea has caused Sheffield to specialize in light steel products, and it has a world-wide reputation for the production of high-grade cutlery and hardware.

Hull is the principal port for the Yorkshire district. It is located on the Humber and has an excellent harbor, while the Ouse and the Trent give it river communication with the interior. In addition to handling the overseas commerce of Yorkshire, it is used by much of the trade between the Midland district and the continent. The trade

of these two regions has been sufficient to enable Hull to rank third among the ports of the British Isles.

**The Midland District.**—Directly south of the Pennines and centering around Birmingham lies the Midland area, or “The Black Country.” This was originally an important iron and steel center, based on local supplies of iron ore and wood for charcoal. These resources have disappeared, but neighboring coal deposits and an abundance of skilled labor have enabled this region to retain its importance in the metal industries. It has the additional advantage of

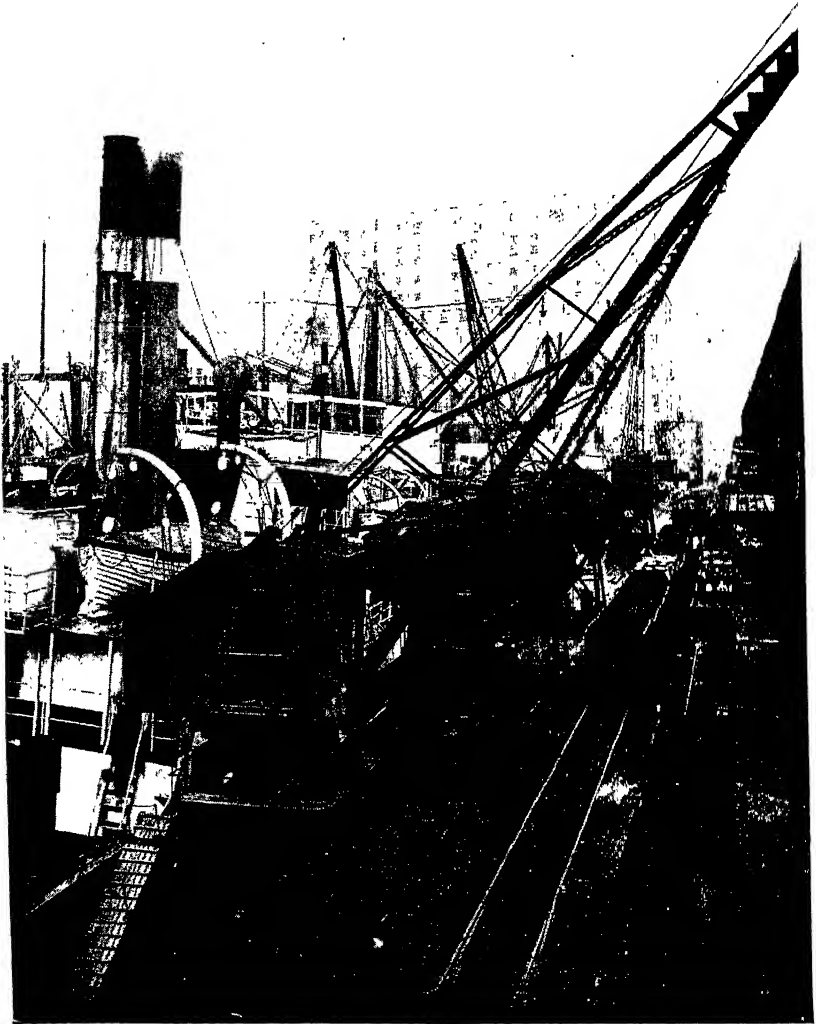


Preparing steel castings, Sheffield, England. (Courtesy of the Commercial Museum, Philadelphia, Pa.)

being located near the center of England, and of having excellent transportation facilities. Birmingham, which is its chief center, is the third largest city of the British Isles, and is second only to London as a railway center. The city specializes in the production of hardware, automobiles, machines, and other iron and steel products of high value in proportion to their weight. Coventry, which lies slightly to the south, engages in these activities, and is especially noted as the center of the British automobile industry.

**The Lancashire Plains.**—The Lancashire area, with Manchester as its commercial capital, is the center of cotton manufacturing in Great Britain, and one of the great cotton textile centers of the world. Situated to the west of the Pennines, it lies nearest the American sup-

ply of raw cotton, and has in Liverpool an excellent port for receiving such shipments. However, its exposure to the moist, westerly winds was probably the most important factor in the location of the industry



A portion of the port of Liverpool. (Courtesy of the Commercial Museum, Philadelphia, Pa.)

in this region, as high humidity was necessary to prevent the threads from ruffing and breaking. It had the additional advantage of large local deposits of coal as a source of power, and it has gradually built up a large group of highly skilled laborers. While some attention is

given to the iron and steel and chemical industries, the population of Lancashire is primarily interested in the cotton textile industries, and other activities are of secondary importance.

*Manchester.*—Manchester is the industrial and commercial center of this region. Although a considerable proportion of its population is engaged in cotton spinning, its greatest importance is as a great warehouse center for the whole cotton district. In 1894 the city became a port, as well as an industrial center, through the construction of the Manchester Ship Canal. This is 35.5 miles long, with a minimum depth of 28 feet, and permits ocean shipping to reach the center of this great industrial area.

*Liverpool.*—Liverpool still remains the great port for the Lancashire district, and is the second most important port of the British Isles. Located on the Mersey, it has an excellent harbor, and its hinterland consists of the densely populated industrial areas to the west of the Pennines and in the Midland section. Its imports consist of foods and raw cotton, while its great exports of cotton goods, machinery and chemicals make it the leading export port of the United Kingdom.

**The Cumberland District.**—A small industrial area surrounds Barrow in northwestern England. Although to the north of the plains proper, its importance is based on local deposits of coal similar to those found in the lowlands to the south. This coal is sufficient not only to supply a local iron and steel industry, but also to provide some surplus which goes into coastwise trade. The manufacturing of the area is based not only upon coal, but upon local deposits of high-grade iron ore. Unfortunately the amounts of both of these resources are limited, and consequently the Cumberland district is likely to remain of secondary importance.

**Southern England.**—Structurally, southern England consists of a series of limestone uplands separating the clay lowlands. The outer ridge of limestone is known as the Lincoln Heights in the north and the Cotswold Hills in the south. Southeast of this ridge is a fertile clay belt extending under Oxford and Bedford. This in turn is bounded on the southeast by another ridge of limestone and chalk which extends from the Wash southwest through the East Anglian Heights and the Chilterns to Salisbury Plain, where it divides into three ridges enclosing the London Basin, the Weald and the Hampshire Basin. These ridges of resistant limestone, which rise abruptly above the more easily eroded clay basin, are unsuitable for cultivation, but they are used for grazing and support large flocks of sheep. The soil of the basins is usually very fertile, and is especially so where the native clay soils are



mixed with the limestone eroded from the uplands. These plains form the agricultural heart of England and the richest lands of the British Isles.

The plains which border the Pennines are primarily devoted to industry and mining. They contain great smoky cities, and the landscape is cluttered with heaps of waste from the mines. Although some agriculture is carried on in all portions of this region, it is of slight importance, and engages the attention of only a small portion of the population.



The vales and downs of Dorset. (Times Wide World Photos.)

In the south the entire landscape changes. Coal mines disappear, and industrial cities are less numerous. Agriculture, however, is of much greater importance, and this is the agricultural heart of Great Britain. It is a delightfully rolling country, and contains innumerable little agricultural villages whose sturdy, white-walled homes reflect something of English stability, and whose gardens and tree-lined streets reflect a real appreciation of beauty. Between the villages are compact hedge-bordered fields devoted to prosperous crops of grains, potatoes and sugar beets, or remaining as rich green meadows. Animals are everywhere in evidence. Dairy cattle, horses and swine are abundant

in the lowland meadows, while large flocks of sheep graze on the green pastures of the ridges. This region is appropriately called "Green England." It contained the major portion of the English population prior to the Industrial Revolution, but with the rising importance of coal it lost its leadership to the areas bordering the Pennines.

Industry is also important in the south. London is the greatest industrial city of the country, and such towns as Oxford, Gloucester, Bedford and Croydon are of growing importance. The manufacturing differs from that of the north in that it is less dependent on coal, and more diversified. Since the World War the industries of this region have been increasing more rapidly than those in any other part of the country, and as a consequence population has again been attracted toward the south.

**The Southern Ports.**—Southern England is fortunate in having excellent ports on all the bordering bodies of water. These are mostly located on the various estuaries which indent the edges of the plain. The Wash, in the northeast, contains no important port due to the low marshy character of the bordering Fens. However, to the southeast the estuary of the Thames has enabled London to become the leading port of the British Isles.

*London.*—London is located at the head of navigation and at the first bridgeable point on the Thames. Here land routes tended to converge and meet water routes to the sea. It has consequently been the site of an important town since the Roman period. The estuary upon which it is located opens opposite the mouths of two important rivers on the continent, the Rhine and the Scheldt; thus the contacts of London with the continent have always been close. Furthermore, it is situated near the heart of agricultural England, and the fact that the roads follow the chalk downs which in turn lead to London, caused this city to become the political and economic center of the agricultural district. Consequently, before the Industrial Revolution London was by far the most important city of England. With the development of manufacturing London lacked coal, but could easily bring it in by water from the northern fields. Its trade relations with the continent, and the fact that it was the cultural, political and financial center, not only of Great Britain but of the Empire, attracted thousands from all portions of the island, and caused it to become the largest city in Europe. At present the estimated population of Greater London is 8,203,000, or about one-fifth of the total population of England and Wales.

London is primarily commercial in interest, and is the leading

port of the British Isles. It is the most important British importing center, and is also the great *entrepôt* port of Britain, although its importance in this connection has somewhat declined. Although commercial interests dominate, London is the leading manufacturing city of Great Britain, preparing colonial raw materials and carrying on those industries which are characteristic of every large center of population.

*Southampton.*—To the south lies Southampton, which ranks fifth among the British ports, and is rapidly becoming the chief terminus or port of call for the great transatlantic liners. Its excellent and protected harbor and its double tide, which prevents a normal low-water minimum, are decided advantages, as are its proximity to London and excellent rail communications with that city. It is on the direct route of ships using the English Channel, and this, with the advantages just enumerated, is causing it to replace Plymouth as a port of call for ships plying between the continent and North America.

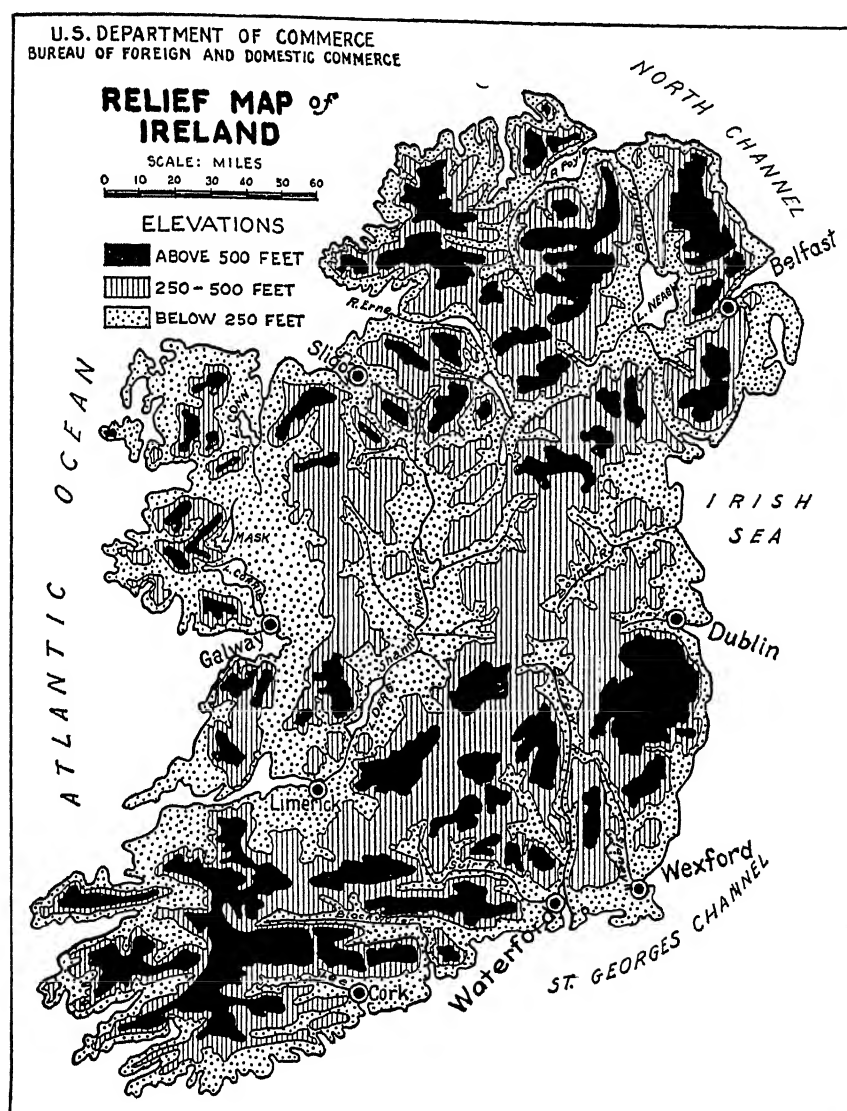
*Bristol.*—Toward the east the Bristol Channel and the Severn provide an opening between Wales and the highlands of the Devonian Peninsula. Numerous ports have grown up around this estuary, and of these Bristol has become the most important. This city lies nearer to America than any other major British port, and is situated nearer to London than Liverpool or the other ports of the west. Consequently it handles much of the trade passing between America and the southern lowlands.

#### IRELAND

The Irish Sea has formed a sufficient barrier to enable Ireland to maintain its racial and cultural individualism. These conditions have also been fostered by the fact that the island is isolated from the mainland by its larger eastern neighbor. Nevertheless, the two islands lie so close together that intimate political and economic relations between them have been inevitable. Great Britain, with its larger size and more abundant resources, has tended to dominate these relations. Cultural differences, combined with political and economic domination, have thus led to constant friction between the English and the Irish.

Structurally, Ireland is also closely related to Great Britain, as the principal relief features of the latter stretch westward under the Irish Sea and reappear in the smaller island. The highlands of northern Ireland are a continuation of those of Scotland, and the highlands

of the south are related to those of Wales. Unfortunately, however, the coal-bearing strata of the Pennines do not appear in Ireland, which



Relief map of Ireland. (U. S. Department of Commerce.)

is economically handicapped by an almost complete absence of this fuel.

**The Irish Free State.**—The Irish Free State occupies the central and southern portions of the island. Its people differ from the

majority of those of Great Britain in race, culture and religion. These differences have been partially responsible for the continuous friction which has characterized the relations between the peoples of the two islands. The Irish have desired political independence, but the proximity of the islands makes it doubtful whether the British will ever consent to complete separation. However, the formation of the Irish Free State as a self-governing dominion within the British Commonwealth of Nations has marked a decided step forward in the relations of the two peoples.

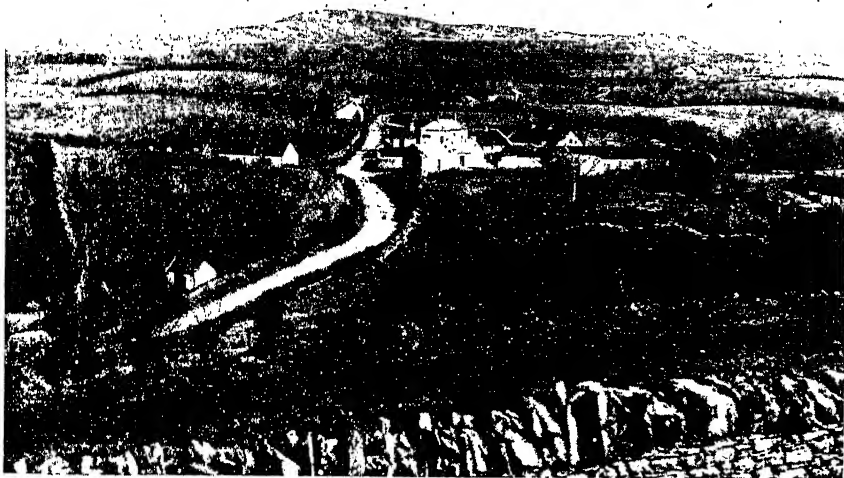
Topographically, Ireland is frequently likened to a saucer with its central plain surrounded by highlands. The principal break in the rim occurs in the east opposite the Cheshire Gap, thus providing easy contact between central Ireland and the English plain. Dublin, situated on an excellent harbor, controls this gateway and has therefore become the leading commercial city of the Irish Free State. It has the added advantage of being connected with all portions of the country by rail and canal, and thus is well equipped to serve as the capital of the new state.

The central plain occupies one-third of the island, and is a drift-covered area with poor drainage. It is mostly drained to the west by the Shannon, whose indefinite course and numerous lakes indicate the flatness of the country. Large sections are covered with peat bogs, from which some 6,000,000 tons of peat are taken annually. This furnishes the chief domestic fuel of interior Ireland. The central plain is the agricultural center of the country, but the lack of proper drainage handicaps cultivation, and makes the raising of animals the predominant activity. A surplus of meat and dairy products is produced, most of which is shipped to Great Britain by way of Dublin. This is a land of small holdings, from which the farmer and his family have difficulty in scraping a scanty living. A small portion of the land is devoted to the raising of oats, barley, potatoes and other root crops, but most of it remains pasture on which a few cattle and swine are grazed. Fortunately, both drainage and soil are not uniform, and some areas of fertile, well drained soils are intensively cultivated.

The rain-soaked mountains of southwestern Ireland are noted for their beauty. Here Macgillicuddy's reeks, the highest summits of the island, attain elevations of some 3400 feet. Around their base are the forest-bordered lakes of Killarney, so famous in Irish song and folklore. This is mostly a pastoral region, although the jagged Atlantic coast line, with its many harbors, causes a portion of the population to turn their attention to fishing. Cork is the chief city of the

south, and Cobh, (Queenstown) its outport, is a port of call for steamers bound to and from Liverpool.

**Northern Ireland.**—Most of the people of northern Ireland originally came from England or Scotland, and differ from the southern Irish in race, culture and religion. This section has, accordingly, remained a part of the United Kingdom, and is politically distinct from the rest of the island. Physically it is a rolling area of rounded hills, and has comparatively little level land. Grazing and the cultivation of potatoes, oats and flax are the principal agricultural activities.



Typical Irish countryside near Saul, County Down. (H. J. Smith.)

However, this region differs from the Irish Free State in that manufacturing is the leading occupation. Belfast is the center of this activity, and is also the leading commercial city of northern Ireland. It has long been noted for the manufacture of linen, and has recently become important for its shipbuilding. Woolen textiles, small metal goods and a variety of other products are turned out in small quantities.

#### AGRICULTURE

The British Isles were primarily agricultural until the end of the eighteenth century. Sufficient food was produced to meet the needs of

the population, and there was even some surplus for export. Following the Industrial Revolution, a greater emphasis on manufacturing and an increasing population caused Great Britain to become partially dependent upon outside sources for its food supply. In spite of this change, the agricultural industry was prosperous until about 1870. At that time British markets began to be flooded with cheap grains from the virgin lands overseas. Under a free trade policy introduced to insure cheap food for industrial workers, the British farmer was unable to compete with the cheaper imported grains, and the amount of cultivated land began steadily to decline. Attention was then given to the animal industry, and the production of meat became of major importance. Recently attention has been centered on the production of highly perishable products such as milk, vegetables and meat, which are difficult or expensive to transport long distances.

TABLE 68  
AREA OF AGRICULTURAL LAND IN GREAT BRITAIN  
BY 10-YEAR PERIODS, 1871-1920, AND 1928  
(thousands of acres)  
(U. S. Department of Commerce)

Period	England and Wales		Scotland	
	Arable Land	Permanent Grass	Arable Land	Permanent Grass
1871-1880.....	14,766	12,300	3,509	1,116
1881-1890.....	13,495	14,199	3,636	1,201
1891-1900.....	12,516	15,177	3,523	1,374
1901-1910.....	11,679	15,724	3,427	1,566
1911-1920.....	11,468	15,544	3,346	1,456
1928.....	10,111	15,393	3,133	1,532

**Present Agricultural Conditions.**—Agriculture in Britain is today relatively unimportant. Normally the island produces enough food to support its population for only six weeks each year. The task of providing this small amount of food engages the attention of only 6.8 per cent of the gainfully employed population of England and Wales, and approximately 7 per cent of this population in Scotland.

While over 80 per cent of the land of the United Kingdom might be agriculturally productive, only 23 per cent is at present classified as arable land. This marks a decline of 32 per cent in the acreage of arable land since 1870. On the other hand, permanent grass land occupies approximately 55 per cent of the total land area, and has

increased some 30 per cent since 1870. Thus the United Kingdom is today a land of meadow and pasture, which implies that the raising of livestock is the most important phase of agriculture.

TABLE 69  
ESTIMATED ACREAGE OF PRINCIPAL CROPS IN BRITISH ISLES, 1928  
(U. S. Department of Commerce)

Crop	England and Wales	Scotland	Northern Ireland	Irish Free State
Oats.....	1,762,346	878,436	307,103	649,000
Wheat.....	1,395,541	58,227	4,874	31,000
Barley.....	1,184,958	111,924	2,032	129,000
Potatoes.....	489,019	144,026	155,521	363,000
Tame hay.....	1,567,973	449,767	.....	2,334,000
Permanent hay.....	4,500,274	117,286	227,195	2,334,000
Flax.....	.....	.....	37,247	8,000
Turnips and mangels....	1,017,839	379,253	43,952	274,000

**Tenancy and the Size of Farms.**—Although exact information on the extent of tenancy is lacking, most authorities contend that over 90 per cent of the land is so farmed. However, the existence of long-term leases eliminates most of the evils which usually attach to this system.

The average size of farms in Great Britain is about 94 acres, which is considerably larger than is usual in the other farming regions of northwestern Europe. The number of farms has been declining. This is especially true of the larger and smaller holdings, but those of medium size have actually increased.

**The Livestock Industry.**—Climate and relief combine to make the western portion of Great Britain unsuitable for the cultivation of grains, and it is not surprising that animal raising achieves there its greatest relative importance. The slight demand for labor is another feature which has added to the attractiveness of the animal industry. The importance of livestock may be seen from the fact that, in 1925, 68.6 per cent of the agricultural income of England and Wales and 79.5 per cent of that of Scotland were derived from the sale of livestock and livestock products.

**Cattle.**—Formerly cattle raising in Great Britain was almost entirely concerned with the production of meat. Today meat production is still an important phase of the industry, but the raising of dairy cattle and of blooded stock for breeding purposes is of increasing importance. Dairying is especially important in England, where the



large industrial population provides important markets for milk. In Scotland, on the other hand, dairying is considerably less important, and most of the cattle are raised for meat. Cattle raising is carried on in most sections of Great Britain except the most rugged regions of Wales and the Scottish Highlands.

*Sheep*.—Great Britain contains far more sheep than might be expected from its dense population and its moist climate. No other European area has so many per square mile. Sheep raising is carried on in all sections of the island, but is especially important on the porous limestone ridges of southern and eastern England and in the highlands of southern Scotland and Wales. The British sheep are good meat producers, and the wool, although rather coarse, is produced in considerable amounts.

*Crops*.—The principal cultivated areas of Great Britain are the clay and sandstone portions of the English plain. The cool, moist climate causes oats to be the principal crop of the island. Wheat is raised in the southeast, where the drier and warmer summers prove well suited for grain. The yield per acre is high, but the total amount produced is not large. Barley ranks third among the grains in acreage, and frequently exceeds wheat in the amount produced. Its chief center of production is southeastern England, although it is grown in some quantities throughout the entire eastern portion of the island. Among the root crops, potatoes are the most important, and are to be found in almost every section where relief and soil permit. Sugar beet acreage, while still small, is increasing rapidly with the aid of government subsidies. Tame hay is raised in all the agricultural districts, and ranks second in acreage among the crops of the United Kingdom. In general, the total amount of all farm crops produced is not large. Combined, they constitute only about 20 per cent of the total value of all agricultural products. Although in most cases the total yield is not high, the yield per acre is frequently very great. This is due to intensive cultivation, to the fact that only the best land is used, and to a climate which is favorable for certain crops. Recently the production of crops has declined, all important crops except sugar beets and potatoes being grown in smaller amounts than prior to the World War.

*Ireland*.—Ireland is essentially a land of farmers. Its retarded economic development, the lack of important natural resources, and its greater distance from the continent have caused industry to be of minor importance. Some 40 per cent of its working population is

engaged in agriculture, and upon this activity the economic well-being of the island depends.

Unfortunately, Ireland is subjected to certain natural conditions which limit the variety of its agriculture. Lying to the west of Great Britain, it has a decidedly marine climate, with heavy rainfall, cool summers and but slight seasonal variations in temperature. Also, much of the central plain, especially large portions of the valley of the Shannon, are low and boggy, making cultivation difficult and the raising of many crops impossible. These same conditions, however, lead to the growth of luxuriant natural vegetation which provides excellent pasturage for livestock. The country lacks large industrial populations which might provide ready markets for such perishable commodities as milk. Consequently, the livestock industry is directed largely toward supplying its eastern neighbor with meat, butter, bacon, poultry and eggs.

The importance of livestock can be seen from the fact that nearly 50 per cent of the area of the island is in permanent grass, while crops occupy slightly over 20 per cent of the total area. The importance of animals is again illustrated by the fact that livestock and livestock products make up 80 per cent of the value of all agricultural produce.

The acreage devoted to crops is decreasing, although in some cases the amount produced has increased in spite of the use of the smaller area. Approximately 60 per cent of the cultivated acreage is devoted to hay, and this crop has increased within recent years. Oats and barley are leading crops, although both are declining in acreage. Potatoes are raised everywhere throughout the island, and are of major importance as both a human and an animal food. Flax was formerly raised in considerable quantities in northern Ireland, but the crop has declined until the production today is slight. The most important cultivated sections of the island are in the east and the south central part. Here a remarkably fertile soil leads to prosperous mixed farming districts.

Great Britain serves as a large and ready market for Irish agricultural products. The fact that some 80 per cent of the exports of Ireland go to Great Britain clearly indicates this relationship. This trade is, however, not one-sided, for Ireland secures some 70 per cent of its imports from Britain. The greater part of the exports of Ireland are agricultural products, and most of these are animal products. In 1929 approximately 69 per cent of all exports consisted of animals and animal products. The government and numerous co-

operative societies are striving to expand this trade and to make it more profitable.

### THE FISHING INDUSTRY

Some sixty miles east of Yorkshire lie the Dogger Banks, the most famous fishing grounds in the world. These banks consist of a submerged plateau approximately 7000 square miles in extent and covered with water to a depth of between 100 and 120 feet. To the north and west important fishing grounds also lie off the Faeroe Islands and Iceland. Less important centers are to be found in the English Channel and in the waters surrounding Ireland. These fishing grounds, together with numerous harbors and limited possibilities for agricultural development, naturally turned the attention of the British to the sea and caused the islands to develop the most extensive fishing industry in Europe.

TABLE 70  
EUROPEAN SEA FISHERIES, 1930<sup>1</sup>  
(thousands of metric tons)

United Kingdom.....	1189.3
Norway.....	1140.9
Germany.....	368.0
France.....	290.2
Iceland.....	253.1
The Netherlands.....	236.7
Portugal.....	185.3
Denmark.....	92.7
Sweden.....	87.4
Belgium.....	38.0
Estonia.....	16.9

The most important fisheries lie in the North Sea, and the fishing fleets of the eastern coast of Britain normally bring in four times as many fish as those of the west. Recently, however, the Dogger Banks have been overfished, and it is becoming increasingly necessary for British fishermen to go farther afield. Over 150 ports in Great Britain alone have important catches of fish. The most important English ports in this connection are Hull, Grimsby, Yarmouth, Lowestoft and North Shield, while in Scotland Aberdeen and Leith hold the leading positions. The English ports have unusual facilities for handling and preparing the catch, which is dispatched with haste by fast trains to London, the world's most important fish market.

Fish is the only food exported in important quantities from the British Isles. Normally the United Kingdom exports over half of its

<sup>1</sup> *Statistical Yearbook of the League of Nations, 1932-33.*

catch, the largest portion going to the Baltic countries. Thus the exports of British fish averaged 629,800 tons a year for the five-year period 1924 to 1928. Nevertheless, today the value of imports is considerably in excess of that of the exports, although it is less in tonnage. Most of the imports are canned fish, salmon being especially important.

### NATURAL RESOURCES

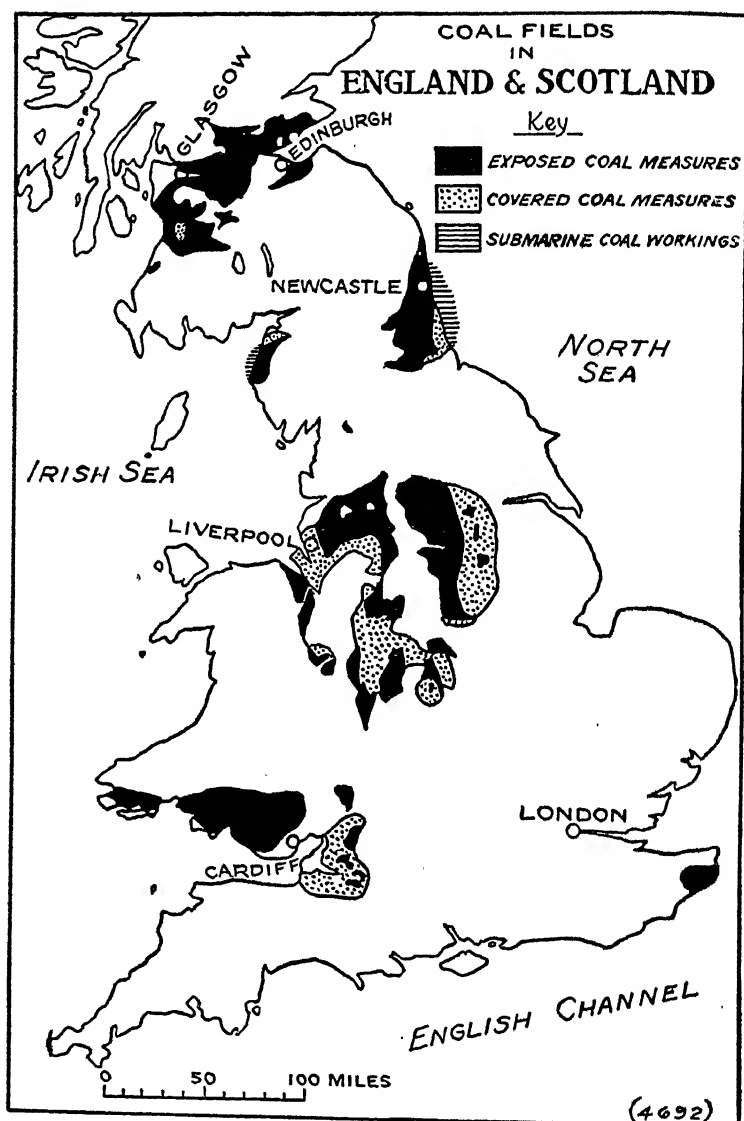
The British Isles are not endowed with a great variety of natural resources, but are fortunate in having in considerable quantities the two most important, namely, coal and iron. Upon these much of the industrial activity of the islands has been based, and they have both directly and indirectly encouraged commercial activity.

**Coal.**—Coal is a most valuable resource in Great Britain. Its importance can be seen from the fact that it constitutes over 90 per cent of the value of all minerals produced. It is the only source of power to be found in any abundance, and consequently it is the one used by nearly all British industries. The dependence of industry on coal is shown by the fact that every major industrial city on the island, with the single exception of London, is located on or beside a coal field. The abundant supplies of coal, more than any other physical factor, have been responsible for the industrial greatness of this nation.

Coal has also played a leading part in British commercial activity. Many of the most important fields lie on or near the coast, the average rail haul of coal for export being only 25 miles. This means that Great Britain is better situated than any other major coal-producing nation for the export of coal by water. It also means that this island is best suited to supply the fuel needs of the thousands of coal-burning ships which touch at its shores each year. Coal is thus an article of export which is sent to other regions in exchange for the food and industrial raw materials which the nation needs. Ships coming to Britain are often loaded with bulky raw materials, while those leaving her shores carry manufactured goods of much less bulk. If only manufactured goods were carried, there would frequently be much empty space in the holds of these vessels. This would not be profitable, and accordingly coal is used to fill these empty spaces, and by so doing aids in making British commerce profitable.

Recently the coal industries of Great Britain have been declining in importance, with consequent unemployment and economic difficul-

ties. Nearly four-fifths of this decline has been due to a decrease in exports, but physical factors are partially responsible for it. Britain



The coal fields of Great Britain. (U. S. Department of Commerce.)

is paying the price for being a pioneer in the coal industry. The more valuable and easily accessible deposits are being exhausted, and the mining of deeper and less valuable veins increases mining costs and reduces Britain's comparative advantage. Much out-of-date equip-

ment is also in use, for the British operators have been slow to introduce improved methods of mining. Thus there is increased difficulty in competing with regions such as the Ruhr, where the introduction of improved methods has greatly increased the production per man. Part of these handicaps may be eliminated, but others will continue, and the British coal industry must adjust itself to present conditions before any degree of stability can be achieved.

**Iron Ore.**—The only other mineral produced in any quantity in Great Britain is iron ore. Normally this nation ranks second to France among the European nations, in both the production and reserves of this metal. Production within recent years has averaged approximately 11,000,000 tons, but this marks a decline of nearly 30 per cent from pre-war days. Much of the British ore is of low grade, and, in spite of large reserves, the nation produces only enough to meet about two-thirds of its needs, the balance being imported from Spain, Sweden, France and Algeria. However, reserves are sufficient to meet the needs of the country in case of necessity; and if the richer ores of other sections are ever exhausted, British production may be expected to increase.

**Petroleum.**—The United Kingdom ranks second to the United States among the world powers in the consumption of petroleum, but only insignificant amounts of crude petroleum are produced within the nation itself. The only important local source of oil is the Scottish shale industry. Within recent years the average annual output of this industry has been some 1,340,000 barrels. As the total consumption averages approximately 50,000,000 barrels yearly, it is evident that most of the oil consumed must be imported.

Although a comparatively small proportion of the world's oil is located within Great Britain or even within the British Empire, between 15 and 20 per cent of the world's output is controlled by British-owned or British-affiliated companies. The percentage of the world's oil reserves controlled by such companies is greater than is indicated by the production, and is estimated by some at over 50 per cent. As oil has become of increasing importance as a fuel for ships, the British government has interested itself in forwarding the interests of British oil companies.

## MANUFACTURING

**The Rise and Development of British Industries.**—The Industrial Revolution made itself felt in England before it influenced



Iron ore reserves of the British Isles. (U. S. Geological Survey.)

continental Europe, and consequently that country first developed a modern factory system. The factors responsible for this early industrialization were partially geographical and partially non-geographical in character. Among the most important of the geographical factors were the insular location of the country, which freed it from the danger of outside interruption and interference, the presence of such valuable resources as coal, iron and water power, a most favorable climate, the growth of maritime activities, and a sufficiently large population to provide abundant skilled labor. The most important non-geographical factors were the rapid progress of mechanical inventions and the relative abundance of surplus capital. A combination of these factors led to such a rapid rise of British industry that throughout the last century Britain held undisputed leadership in industrial activity.

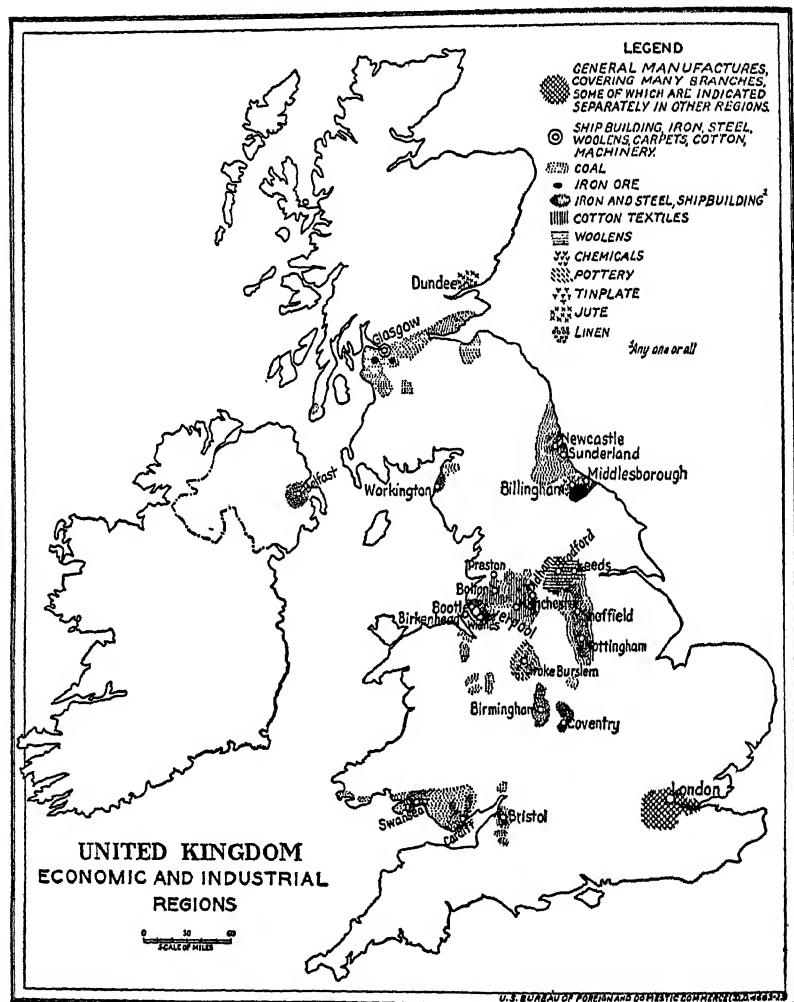
This rapid industrialization had important influences upon the human development of Great Britain. It made it possible to support a far larger population than existed prior to that time. It also led to a rapid expansion of trade, as it became necessary to import raw materials and foods and to export manufactured products. Two important shifts in population also resulted, the first from the agricultural south to the coal fields of the north, and the second from the rural districts to the towns. These changes have exercised a profound influence over British life, and are responsible for some of the difficulties which the nation is now encountering.

**The Present Importance of British Industry.**—Today Great Britain is vitally dependent upon its manufacturing. It has two things of major importance to sell to the world. These are the skill of its workmen, and its coal. These can be most effectively marketed by applying them to imported raw materials and selling the resulting manufactured products. If Great Britain is to maintain its present population, retain its existing standards of living and remain prosperous, its industrial activity must continue undiminished.

Something of the present importance of British industrial activity may be seen from the fact that 39.7 per cent of its working population are engaged in manufacturing. In this it is surpassed only by Switzerland and Belgium among the European nations. Additional appreciation of the extent of this activity can be gained from the fact that the value of manufactured products amounts to over \$14,000,000,000 annually, while the value added by manufacturing amounts to some \$5,700,000,000 each year. The importance of industrial products in British foreign trade is indicated by the fact that they make up 70 per cent of the export items.



**Recent Trends in British Industry.**—Britain enjoyed undisputed leadership in manufacturing until the beginning of the present century. By that time Germany and the United States had increased their industrial equipment to a point where they were becoming effective competi-



Economic and industrial regions of the United Kingdom.  
(U. S. Department of Commerce.)

tors in the iron and steel and textile industries. In spite of this, British industry increased until the World War, but since the conclusion of that conflict it has actually declined in importance. This has been due largely to increased competition on the part of countries with lower labor costs or with more abundant raw materials, and to increased domestic

production in markets to which Britain formerly exported. The use of out-of-date equipment and the conservatism of British industrialists have had a similar effect.

**The Location of British Industry.**—Most of the industries of the United Kingdom are located on or adjoining the coal fields. Thus in Scotland the central lowlands are the site of most of the industrial activity. In England over half of the industrial activity is concentrated in the neighborhood of the eastern and western coal fields. Greater London contains another quarter, and the remaining fourth is scattered through the other sections of the country.

Since the World War there has been a noticeable movement of British industry toward the south. Numerous factors have been responsible for this movement, among the most important of which are lower taxes, due to less unemployment; less industrial conservatism; nearness to London, where purchasing power has been less influenced by the depression; and the increased use of electricity as power, which has lessened the desirability of locating near the coal mines. This movement of industry is counter to the one which has been in operation for the past century and, if continued, may bring about an important shift in the distribution of population.

**The Iron and Steel Industry.**—The manufacture of iron and steel is one of the oldest industries in Great Britain and, combined with engineering and shipbuilding, it today employs 23.8 per cent of the persons engaged in all industrial activities. However, iron and steel are important not only because of the numbers employed and the value of the products, but also because they provide the raw materials for the manufacture of the machinery upon which the whole complex structure of British industry is based. They also provide the raw materials for the manufacture of commerce carriers on both land and sea, and have consequently played an important part in British commercial supremacy.

As has been previously pointed out, this industry is concentrated around the coal fields, and especially around those which lie near the coast. It is estimated that two-thirds of the iron and steel plants are located on or near the seaboard. Those located on the coast, or where water transportation is available, tend to specialize in bulky, heavy products, while the inland centers tend toward the production of small articles of high value.

The industry is based largely upon abundant supplies of good coking coal, upon considerable deposits of iron ore, and upon abundant supplies of limestone.

Great Britain normally ranks third in the production of pig iron

TABLE 71  
 PRODUCTION OF IRON AND STEEL IN GREAT BRITAIN  
 (in tons)  
 (U. S. Department of Commerce)

Year	Pig Iron	Steel
1913.....	10,260,315	7,663,876
1920.....	8,034,717	9,067,300
1922.....	4,902,300	5,880,600
1924.....	7,307,400	8,201,200
1926.....	2,458,200	3,596,100
1928.....	6,611,300	8,525,100
1929.....	7,565,000	9,820,000
1930.....	6,192,000	7,326,000
1931.....	3,758,000	5,199,000

and second in the production of steel among the European nations. However, it is declining in relative importance in both of these activities. The production of pig iron actually declined 25 per cent between 1913 and 1929. The production of steel increased 28 per cent during the same period, but this assumes its true significance when it is realized that the production of the world as a whole increased 59 per cent during that time. The recent depression affected British industry most severely; but Great Britain has a well established industry, excellent fuel supplies, skilled labor, and a coastal location favorable for exports, and consequently the country should continue to be an important producer and exporter of such products in the future.

**The Manufacture of Machinery.**—Great Britain has long been a leader in the production of finished iron and steel products. The existence of an important iron and steel industry and the demand of the textile and numerous other industries for a wide variety of machines have been responsible for this type of manufacturing. Today textile machinery, rayon machines, locomotives, machine tools, agricultural machinery, automobiles and electrical equipment are but a few of the finished iron and steel products which are produced in large amounts. These industries are less concentrated than the manufacture of iron and steel. The location of the various plants was originally determined largely by domestic markets, and, although considerable amounts of machinery are at present exported, the industries tend to cling to their original locations.

**The Textile Industry.**—The manufacture of textiles was among the first, and was for a long time the most important, of the industries of Great Britain. Today these industries nearly equal in importance the production of iron and steel and machinery. The manufacture and

finishing of textile products provides employment for over 1,500,000 workmen, and furnishes 60 per cent of the exports of manufactured goods from the United Kingdom. Raw cotton and raw wool rank first and second among the imports of the country. Unfortunately the textile industries, especially those concerned with the manufacture of cotton, have recently encountered many difficulties, and have contributed no small part to the present unemployment throughout the country.

*Cotton Manufacturing.*—The invention of power-driven machinery for both spinning and weaving laid the basis for the development of cotton manufacture. As these inventions were of British origin, and as the modern factory system first became important in Great Britain, that country maintained undisputed supremacy in this industry until the beginning of the present century. Not only did it supply its own market, but it dominated all foreign markets as well. After 1900, however, competition became keen, and this industry grew rapidly in the United States, Germany and France. Within recent years there has also been a rapid growth of the industry in Asia, especially in Japan, India and China. This increased competition has constituted a most serious problem for the British industry, especially as that industry depends upon foreign markets to absorb approximately 80 per cent of its products. Thus many markets to which Britain formerly exported are supplying their own needs, and competitors with cheaper labor costs are seriously encroaching on such markets as remain. Because of this competition, Great Britain is finding it very difficult to compete in the production of the cheaper and coarser grade of cotton textiles; consequently, it is tending to specialize in the finer grades of cloth in the production of which the high degree of skill of the British workman can be used to best advantage.

Today the United Kingdom has 34 per cent of the cotton spindles of the world, considerably more than its nearest competitor, the United States. However, this gives an exaggerated picture of the importance of the British industry, as many of its spindles are idle. The mill consumption of raw cotton is a better measure of the size of the industry. On this basis, the United States consumed over twice as much as the United Kingdom, and in 1930 Japan actually exceeded the latter country in the amount consumed. However, the value of the British products is greater than the amount consumed would indicate, as that country tends to specialize in fine products of relatively high value.

*Woolen Manufacturing.*—Among the first of the industries of Great Britain was the spinning and weaving of wool. Sheep raising

provided a local source of raw materials which was for a long time more than sufficient to meet the needs of the industry. Following the Industrial Revolution, wool had to give place to cotton as the most important textile manufactured in the island. Nevertheless, the industry is still of major importance. Measured by the number of spindles and looms, the British industry ranks first in the world; but on the basis of the amount of raw wool consumed, Great Britain is surpassed by both France and the United States. As was the case with cotton, the wool industry of Great Britain tends to specialize in high-quality goods upon which its skilled labor can be used to the greatest advantage. Unlike cotton, however, the greater part of the woollen goods produced is used in the domestic market, only about 44 per cent of the finished products being exported. The industry has consequently been less influenced by the decline in export markets and is in a more prosperous condition than is cotton.

### THE BRITISH MERCHANT MARINE

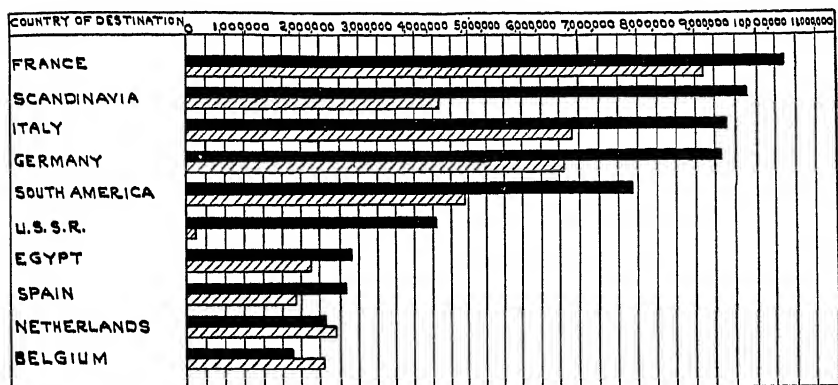
Fishing and trade early produced a demand for ships throughout the United Kingdom, and following the Industrial Revolution this demand increased rapidly due to the expansion of foreign trade. Today the United Kingdom has the greatest ocean tonnage of any nation, and its ships are to be found in every great port throughout the world. Not only is the tonnage ample to meet the needs of the British, but a considerable surplus exists which may be used to carry the goods of other nations. This activity also gives employment to over 250,000 men, and is largely responsible for Britain's leadership in the ship-building industry.

TABLE 72  
BRITISH MERCHANT MARINE: TONNAGE AND PER-  
CENTAGE OF WORLD TONNAGE BY 5-YEAR PERIODS,  
1905-1930  
(thousands of tons)  
(U. S. Department of Commerce)

Year	Tonnage	Percentage of Total World Tonnage
1905.....	15,803	43.9
1910.....	17,516	41.7
1915.....	19,541	39.6
1920.....	18,330	31.9
1925.....	19,441	30.0
1930.....	20,438	29.3

## THE COMMERCE OF THE UNITED KINGDOM

**The Importance of Foreign Trade.**—Foreign trade is of greater importance to the United Kingdom than to any other great industrial nation. The whole economic fabric of the country has been adjusted to the exchange of goods with outside areas. Some 27 per cent of the total amount of goods produced in the United Kingdom is exported, and its greatest industries produce largely for foreign markets. Imports are equally important. The country is dependent upon outside sources for a large proportion of its food supply and all other raw materials,



BRITISH COAL EXPORTS TO PRINCIPAL PRE-WAR MARKETS COMPARED WITH-1928. IN TONS.

■ ANNUAL AVERAGE-1909-1913  
▨ 1928

British coal exports to principal pre-war markets as compared with 1928. (U. S. Department of Commerce.)

with the exception of coal and some iron and wool. Its location, its many harbors, and its active population also favor commerce. Consequently the United Kingdom has long held a most important position in international trade. Prior to the World War it held undisputed leadership in this field, but since the war it has been surpassed by the United States in the value of its exports and closely approached in imports.

**The Character of British Exports.**—Approximately 80 per cent of the domestic exports of the United Kingdom consist of manufactured goods. Raw materials make up some 10 per cent of such exports, coal constituting 60 per cent of these raw materials. Food, drink and tobacco make up another 7.6 per cent, and the remainder consists largely of bullion and coin. As concerns industrial products, 85 per cent of the cotton cloth produced, 54 per cent of all steel products, 44

per cent of all woolens and worsted, 30 per cent of all machinery produced, and 28 per cent of all coal mined, are exported.

**The Character of British Imports.**—Approximately 44 per cent of all imports consist of food, drink and tobacco; industrial raw materials make up 28 per cent, the remaining imports consisting of manufactured goods. The leading individual imports are cotton, wool, wheat, wood, bacon, beef and tea. Foods make up an increasing percentage of imports as compared with pre-war days, while industrial raw materials have declined in relative importance.

**The British Re-export Trade.**—The tremendous foreign trade of the United Kingdom, combined with many productive colonies, have aided in building up a world-wide *entrepôt* trade. London's financial and commercial importance made it a natural collecting and distributing point for articles entering into this trade. Industrial raw materials make up some 55 per cent of such trade; food, drink and tobacco make up another 23 per cent, and the rest consists of manufactured products. These products are collected from every corner of the world, and are brought to London for storage and classification. They are then re-exported to the various world markets. Re-exports were valued at \$423,290,000 in 1930, and were about one-seventh as valuable as all domestic exports.

TABLE 73  
DESTINATIONS OF THE EXPORTS OF THE UNITED KINGDOM  
(percentage of total)  
(U. S. Department of Commerce)

Country	Percentage of Total Exports		
	1913	1926-1930	1931
British India.....	13.4	11.2	8.3
Australia.....	6.5	7.7	3.7
United States.....	5.6	6.3	4.4
Irish Free State.....	...	5.2	7.8
Germany.....	7.7	5.1	4.7
Canada.....	4.5	4.6	5.3
Argentina.....	4.3	4.0	3.8
France.....	5.5	3.9	5.8
All others.....	52.5	52.0	56.2
Total.....	100.0	100.0	100.0

**Areas with Which the United Kingdom Trades.**—The United Kingdom is the only European nation that does not carry on the major

part of its foreign trade with other portions of that continent. Various sections of the British Empire provide the greatest market for British goods, absorbing approximately 45 per cent of all exports. The Empire is, however, less important in furnishing imports, as it supplies only 30 per cent of those entering into the United Kingdom. The importance of India in British trade is outstanding. It is the greatest export market, and ranks high among the countries supplying imports. This may aid in explaining the British attitude toward India's struggle for independence.

TABLE 74  
SOURCES OF THE IMPORTS OF THE UNITED KINGDOM  
(percentage of total)  
(U. S. Department of Commerce)

Country	Percentage of Total Imports		
	1913	1926-1930	1931
United States.....	18.4	16.3	12.1
Argentina.....	5.5	6.1	6.1
Germany.....	10.5	5.6	7.4
British India.....	6.3	5.1	4.3
France.....	6.0	4.9	4.7
Australia.....	4.9	4.5	5.3
Denmark.....	3.1	4.4	5.4
Canada.....	4.0	4.4	3.8
All others.....	41.3	48.7	50.9
Total.....	100.0	100.0	100.0

**The British Balance of Trade.**—The United Kingdom has a large import balance of trade. Thus, during the five-year period from 1927 to 1931, the average annual import surplus was some \$2,319,000,000. Since the British buy more than they sell, a deficit results which must be made up in other ways unless bankruptcy is to result. The fact that British wealth has accumulated steadily in spite of this deficit indicates that it has been more than balanced by other forms of income.

The various sources of income used to offset this adverse trade balance consist largely in returns from British foreign investments and from services rendered to the citizens of other nations, such as carrying their goods on British ships, providing them with insurance and financial services, or entertaining them as tourists while in the United Kingdom. British investments abroad are estimated to total approxi-



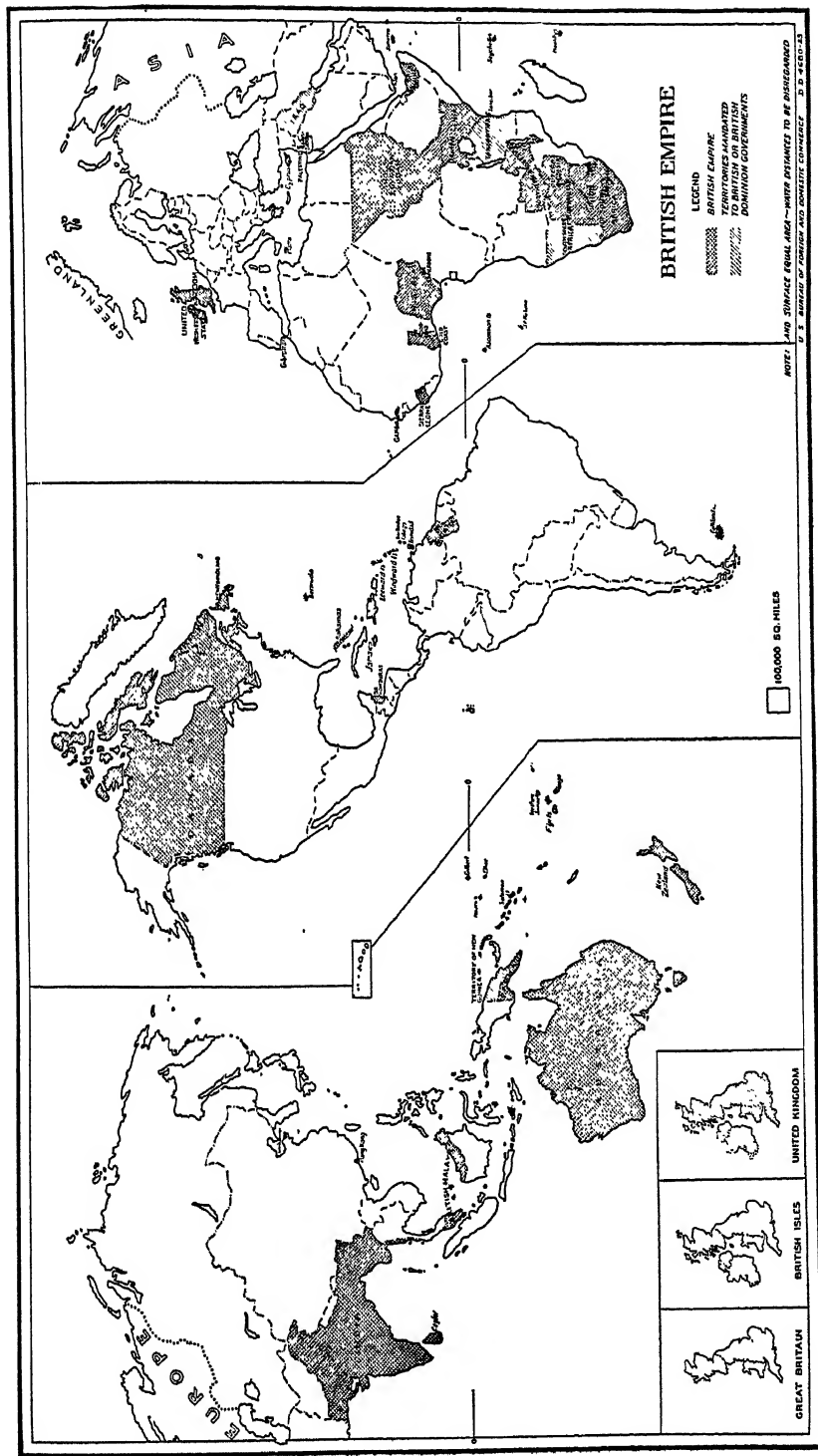
mately \$20,000,000,000, and exceed those of any other country. The returns from these investments naturally vary, but normally they amount to considerably more than \$1,000,000,000 yearly. So important are these invisible exports that they not only offset the import balance of trade, but actually provide a net balance in favor of the United Kingdom which has varied from \$43,000,799 in 1926, to \$736,000,109 in 1928.

### THE BRITISH COMMONWEALTH OF NATIONS

Within the comparatively short space of 150 years, Great Britain has built up the mightiest empire of modern times, and has brought under her control one-fourth of the lands and peoples of the earth. Built by conquest and colonization, it contains areas on every continent and islands on every sea. Fortunately, large sections are located in the temperate zones and are suitable for white habitation. Such areas have usually been colonized, and at present constitute self-governing dominions within the Empire. The colonies proper are for the most part not in the temperate zones, and frequently contain important native populations. In addition to the self-governing dominions and the larger colonies, Britain controls a number of strategic points, most of which are used as coaling stations and naval bases. Such points include Malta, Aden, Gibraltar, Hongkong, Singapore, the Falkland Islands and Jamaica.

Although the Empire has been of decided economic value to Great Britain, that value has decreased somewhat within recent years. The ideal situation from the British point of view would be to have the various units supply raw materials to Great Britain and absorb the products of the British factories. However, some regions such as India, Canada and Australia are developing their own manufacturing, and thus reducing the market for British goods. Some are also finding it to their advantage to trade with nearby nations rather than with the mother country. In order to preserve these markets for the British goods, preferential tariff duties have been established, but these are of doubtful value. It would seem that the only way the British manufacturer can retain the colonial markets is to furnish goods more cheaply or of better quality than can be procured elsewhere.

The possession of such a vast and widespread Empire has involved political problems of a most complex nature. The control of subject peoples has always been a task in which the British have shown themselves most efficient. Although holding themselves apart and refusing



The British Empire. (U. S. Department of Commerce.)

to mix with peoples of different race or culture, they have for the most part governed wisely, and have improved the living conditions of those under their control. However, the recent wave of nationalism or group consciousness which has swept the colonial areas has seriously complicated the problems of government. Unrest and disorder have been widespread, much to the amazement of the average English citizen. If the present unrest continues or increases, Britain must decide just how far it is willing to go in maintaining its control. If it is to continue to bear the "white man's burden," and govern subject peoples for their own benefit and for that of Britain, it must be willing to pay an increasing price for such a privilege.

The situation is different in the case of the self-governing dominions. In those areas control has been relaxed, and today they are bound to the mother country by ties of blood and sentiment rather than by force.

### BIBLIOGRAPHY

- Atwood, R. S., "Localization of the Cotton Industry in Lancashire, England," *Economic Geography*, 1928, vol. 4, pp. 185-195.
- Baily, F. G., "Water-Power Resources of Scotland," *Scottish Geographical Magazine*, 1931, vol. 47, pp. 129-144.
- Barker, W. H., and Fitzgerald, W., "City and Port of Manchester," *Journal of the Manchester Geographical Society*, 1927, vol. 41, pp. 11-31.
- Bromehead, C. E. N., "The Influence of Its Geography on the Growth of London," *The Geographical Journal*, 1922, vol. 40, pp. 125-135.
- Buchan, J. (ed.), *Great Britain, Nations of Today Series*, Houghton Mifflin Company, New York, 1923, 2 vols.
- Butler, H. D., "The Irish Free State, An Economic Survey," *Trade Promotion Series No. 62*, U. S. Department of Commerce, Washington, 1928.
- "The United Kingdom, An Industrial, Commercial and Financial Handbook," *Trade Promotion Series No. 94*, U. S. Department of Commerce, Washington, 1930.
- Carrier, E. H., *The Historical Geography of England and Wales*, George Allen & Unwin, London, 1925.
- Cotter, E. P., "The Port of Liverpool," *Foreign Port Series, No. 2*, U. S. Department of Commerce, Washington, 1929.
- Crowe, P. R., "The Scottish Coal Fields," *Scottish Geographical Magazine*, 1929, vol. 45, pp. 321-337.
- Cundall, L. D., and Landmann, T., *Wales: An Economic Geography*, George Routledge & Sons, Ltd., London, 1925.
- Demangeon, A., *Les Isles Britanniques, Géographie Universelle*, Librairie Armand Colin, Paris, 1927, Tome I.

- Fawcett, C. B., "Distribution of Urban Population in Great Britain, 1931," *The Geographical Journal*, 1932, vol. 79, pp. 100-117.
- "England," *Journal of Geography*, 1931, vol. 30, pp. 111-119.
- "The Nordic Region," *Scottish Geographical Magazine*, 1932, vol. 48, pp. 78-83.
- Fleure, H. J., "The Racial History of the British People," *Geographical Review*, 1918, vol. 5, pp. 216-231.
- "Iron and Steel Industry of Great Britain," *Trade Information Bulletin* No. 639, U. S. Department of Commerce, Washington, 1929.
- Jones, L. R., "The British Fisheries," *Economic Geography*, 1926, vol. 2, pp. 70-85.
- *The Geography of London River*, The Dial Press, Inc., New York, 1931.
- King, H., "The Agricultural Geography of Lancastria," *Journal of the Manchester Geographical Society*, 1928, vol. 43, pp. 55-73.
- Mackinder, H. J., *Britain and the British Seas*, D. Appleton-Century Co., Inc., New York, 1902.
- Milner, F., *Economic Evolution of England*, Macmillan & Company, Ltd., London, 1931.
- Murry, R. H., and Law, H., *Ireland*, The Nations of Today Series, Houghton Mifflin Company, New York, 1923.
- Ogden, H. W., "Geographical Basis of the Lancashire Cotton Industry," *Journal of the Manchester Geographical Society*, 1928, vol. 43, pp. 8-30.
- Ogilvie, A. G. (ed.), *Great Britain—Essays in Regional Geography* (Handbook of International Geographical Congress), Cambridge, 1928.
- Poggi, E. M., "Devon, A Study of Rural England," *Bulletin of the Geographical Society of Philadelphia*, 1930, vol. 28, pp. 161-173.
- Snodgrass, C. P., "The Influence of Physical Environment on the Cultivated Crops of Scotland," *Scottish Geographical Magazine*, 1932, vol. 48, pp. 329-348.
- Stamp, L. D., and Beaver, S. H., *The British Isles*, Longmans, Green & Co., New York, 1933.
- Townsend, R. R., "British Chemical Developments in 1930," *Trade Information Bulletin* No. 750, U. S. Department of Commerce, Washington, 1931.
- Williams, A., "The Growth of the British Empire," *Journal of the Manchester Geographical Society*, 1924, vol. 37, pp. 1-25.

## FRANCE (LA FRANCE)

FRANCE is usually regarded as the cultural and artistic center of the modern world. Not only has the nation produced an unusual number of leaders in art, literature, music, science and philosophy, but it contains a population which is actively interested in the work of these leaders. This commanding position is due in part to the favorable location of the country. Toward the Paris Basin converge the great European routes over which peoples and goods have moved for centuries. Over these routes have also come human and cultural contributions which France has woven into her own life until it has come to represent the ultimate in intellectual and artistic achievement.

The historical greatness of France has likewise contributed to her cultural position. She was the first of the major continental powers to achieve unity. This, combined with her large population and favorable environment, enabled her to hold a commanding position until the close of the Napoleonic Wars. During this period the wealth and splendor of the French court attracted great artists, scholars and other cultural leaders from all portions of the world. These men contributed much to the leadership of the nation. In spite of the fact that the political and military strength of France declined during the nineteenth century, her artistic leadership remained secure. Since the World War France has again risen to a position of political dominance. Political activity has not only stimulated cultural achievement, but has made France one of the most influential powers of the continent. In fact, since the fall of Rome no nation has played such an important part in European affairs or filled so many pages of European history.

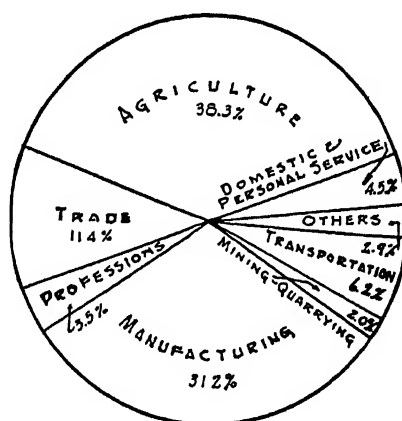
Physically, France may be termed a land of contrasts. The Alps, the central plateau and the plains of the Paris Basin and the Aquitaine combine to provide every variation of relief. Bathed by three important bodies of water, her coast presents every contrast, from the towering, jagged cliffs of Brittany to the low sandy coasts of Languedoc and the Landes.

In climate the variations are also noteworthy. The cool temperate climate of Normandy and Lorraine contrasts sharply with the semi-

tropical conditions of the Riviera. Again, the cloudy, rain-swept heights of Brittany vary greatly from the shores of sunny, dry Provence. Each climatic and topographic region has made its own distinct contribution to French life. So powerful have been the cultural and historical influences in the formation of the French state that these various parts have been brought together in a greater unity than has been achieved by any other major European power.

### POPULATION

**Race and Culture.**—France contains representatives of every major racial group in Europe. The Celtic peoples of Brittany are

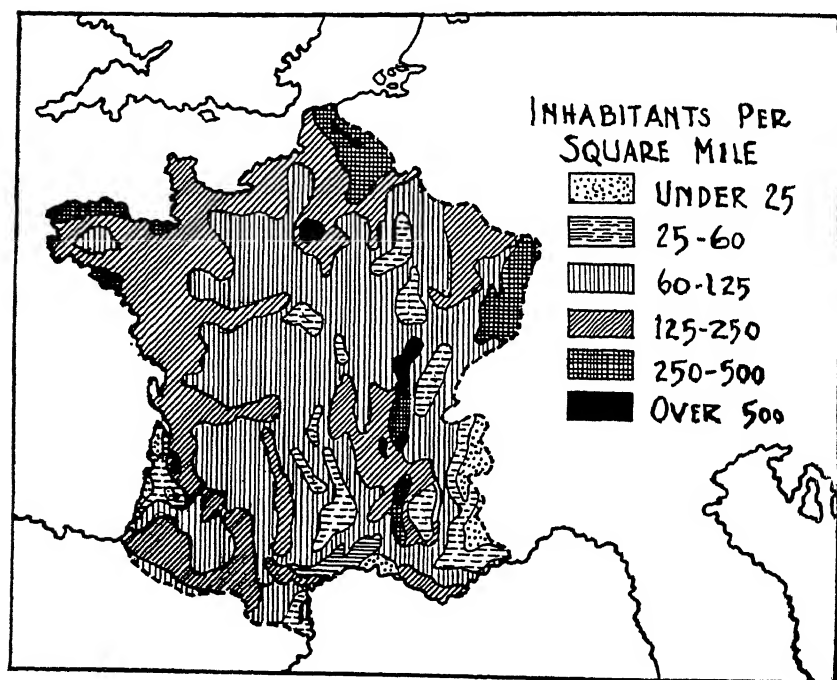


The occupations of the gainfully employed population of France. Percentage of the total employed. (*Statistical Yearbook of the League of Nations, 1930-31.*)

related to the round-heads of the eastern highlands. Normandy and other portions of northern France contain important Teutonic elements; while the Mediterranean long-heads pushed their way up the Rhône Valley, occupying the Aquitaine and much of the central portions of the country. This latter group has contributed the language, religion, love of the artistic, and many other elements of French cultural life. However, the thrifty, industrious and conservative French peasant, who forms the major element of the present population, has received contributions of blood and culture from all of the racial groups.

**Numbers.**—During the Middle Ages France supported a large and increasing population. By 1700 it contained some 20,000,000 people, and was by far the most populous of the civilized nations of Europe.

It continued to hold its leadership until 1800, but since then the rate of growth has been slow in comparison to that of neighboring countries. Thus today it is surpassed in population by both the United Kingdom and Germany, and is nearly equaled by Italy. However, since the war, population has been increasing more rapidly. Between 1921 and 1930 the nation showed a gain of 2,625,000. Part of this gain has been due to an influx of foreigners, of whom there are at present nearly 3,000,000 in the country, but even the native population has increased 700,000 within the past five years. This is twice as rapid as the rate of



The distribution of population in France.

growth prior to the war. If the population continues to expand at an increasing rate, it is possible that France may assume a place of equality among the more populous nations of the continent. The fact that for a long period France had the largest population in western Europe added materially to its political and military strength, and established in the French a point of view toward other nations and toward European domination which still seems to continue, in spite of changed circumstances.

Today France has a population of approximately 41,400,000. In comparison with the United States, this is nearly the same as that of

the New England, Middle Atlantic and South Atlantic States combined. The average density of 195 per square mile is much less than that of any of the neighboring nations. This comparatively sparse population makes necessary a partial dependence on foreign labor, and has been a matter of grave concern to French leaders during recent years.

Agriculture engages the attention of a larger proportion of the population than in any other nation of northwestern Europe, and this is largely responsible for the fact that France is less highly urbanized than most. Only 46.4 per cent of the population is classified as urban; the rest live in towns of less than 2000 inhabitants. It also has fewer large cities than other western states of comparable size. Paris is the only city with a population of over 1,000,000, and only 17 cities in all have a population of over 100,000. France thus has a smaller number of large cities than the United Kingdom and Germany, and is even slightly surpassed by Italy in this respect.

#### SIZE AND SITUATION

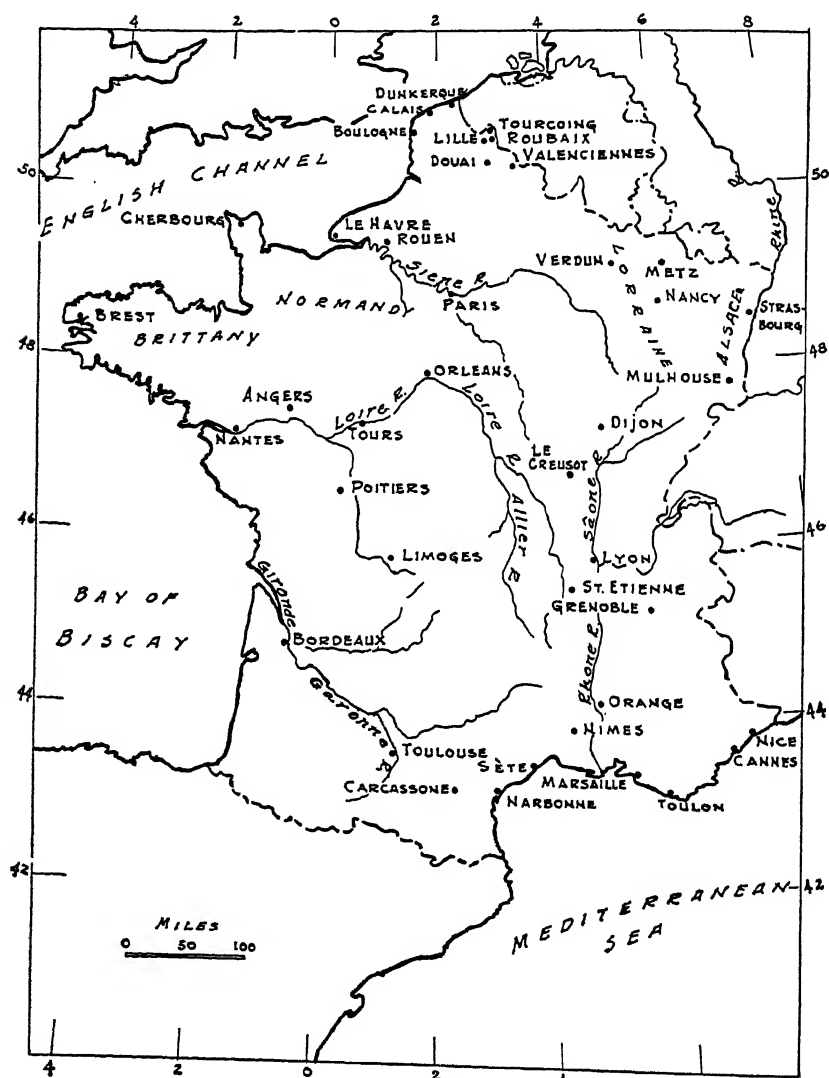
**Size.**—France ranks second in size only to Russia among the European nations. It covers approximately ten degrees of both latitude and longitude, and has a total area of 212,736 square miles. As compared with the United States, this is about equal to the areas of New England, the Middle Atlantic States and Virginia combined. This large size results in great possibilities for agricultural development, varied resources and physical conditions, and important opportunities for internal trade.

**Situation.**—France is more favorably situated than any nation in Europe, if not in the world. It lies near the center of the world's land areas, and is adjacent to three important bodies of water. The English Channel provides easy maritime communication with Britain and the Baltic countries. Such Atlantic ports as Bordeaux, Nantes, and Brest are nearer to America and west Africa than most British ports, and provide direct outlets to the west. Through Marseille and Toulon, France maintains contacts with its north African colonies and other lands bordering the Mediterranean and Black Seas. Marseille also has rapid communication with the Far East, east Africa and Australia through the Suez Canal. Although France lacks many good harbors, its excellent location has favored maritime expansion. The bordering bodies of water first encouraged fishing, and later led to colonization in every continent but Australia, and to world-wide trade.

The nation is also favorably situated with respect to land routes.



To the northeast, through Belgium, the European plain permits easy contacts with northern, central and eastern Europe. To the east the Lorraine Gate gives access to the central Rhine and to Germany.



Outline map of France.

Through the Belfort Gate routes lead to the upper Rhine and, by way of the Danube Valley, to the Near East. In France the Rhône-Saône Valley provides the easiest route in Europe between the Mediterranean and the North Sea. Land routes thus lead to all sections of Europe and

to Asia. By way of these routes have come ethnic and cultural contributions which have played an important part in the intellectual attainments of the nation. They have also been the paths followed by invaders or by French armies marching to the conquest of other territories.

From a military point of view also, the country is favorably situated. Natural boundaries separate it from neighboring states. The Pyrenees form a most effective barrier on the Spanish frontier. The Alps separate France from Italy and Switzerland. Toward the east the Ardennes and the Vosges, with their connecting highlands, are easily defended. The Rhine, which constitutes a portion of the eastern boundary, is far less effective as a military barrier than the crest of the Vosges, which was the boundary prior to the World War. Only on the northeast along the Belgian frontier are natural boundaries entirely lacking. This route was followed by the German armies in 1914, and has been the path of invading armies throughout history.

#### CLIMATE

The lack of relief barriers permits the westerly winds to carry the moisture and moderating influence of the Atlantic over nearly all portions of France. The influence of the Mediterranean is also important, but is limited to the south by such barriers as the Alps and the central plateau. The marine influence thus dominates the climate of the entire country, although it is somewhat modified toward the east.

The effect of the ocean is most pronounced in such western highlands as those of Normandy and Brittany. Here the seasonal variations in temperature are slight, the summers being cool and the winters mild, with almost no frost. Exposure to the oceanic winds causes the rainfall to be heavy and to occur at all seasons, with the maximum during the winter months. The climate is also characterized by much cloudy, foggy weather, which causes the sun to be obscured a considerable portion of the time. This is a land of meadows and orchards, as the summers are too cool and moist to be well suited for grains or vineyards.

Central and eastern France has a climate which is essentially a transition from a marine to a continental type. The summers are hot and the winters quite cool; the rainfall is moderate, and comes mostly during the summer months. This area is well adapted for most grain crops, and on the slopes facing south it is sufficiently warm for the

vine. In the elevations, however, the temperatures are more severe, thus restricting the number of crops which can be raised.

The southern portions of the Rhône Valley and the plains bordering the southern sea have a typically Mediterranean climate. Mountains shut off the cool winds from the north, the only wind of this type which influences the area being the cold, dry mistral which occasionally sweeps down the Rhône Valley during the winter months. The winters are very mild, and the summers are hot, with cloudless skies and abundant sunshine. Dry summers are its principal characteristic, the period from the beginning of June to the end of September frequently having almost no rainfall. The native vegetation is that adapted to the summer droughts. It consists mostly of thick-leaved evergreens, such as the olive, the live oak, the cypress and the Aleppo pines. Forests are rare, and occur mostly in the higher elevations. For the most part, they give place to thickets of dwarfed, scrubby growth. Irrigation is essential for most agriculture, and is widely used. In this region France has some 6,000,000 acres of irrigated lands, or more than any other nation in Europe.

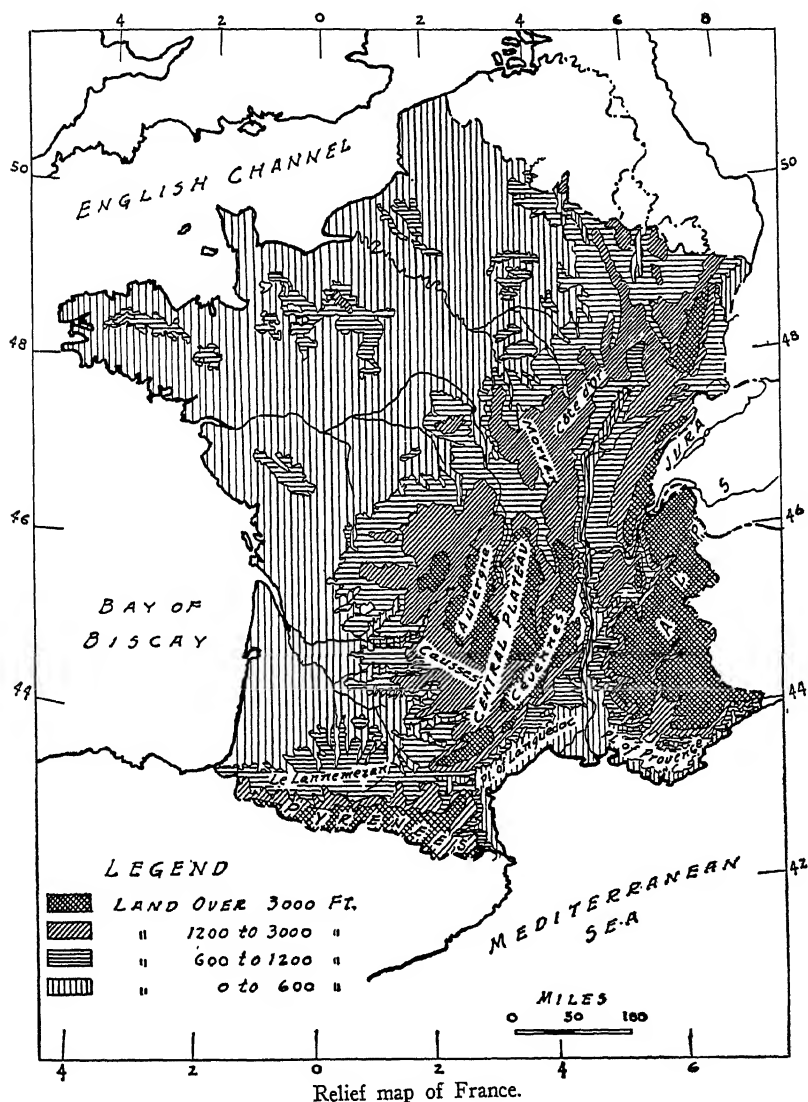
The climate of the Aquitaine Basin combines Atlantic and Mediterranean characteristics. The mild winters and hot summers are similar to those in the Mediterranean district, and the heavier and better-distributed rainfall is the gift of the Atlantic. The hot, moist summers and the mild winters provide a climate which is ideal for the growth of many plants. Fruit trees, nut trees and the vine grow luxuriantly. This is also the section where the climate is best suited for the production of such crops as corn and tobacco. Although favorable for plant growth, this climate lacks the stimulation necessary for great human activity. Consequently the people are more backward than in most other sections of the country.

It is thus evident that France as a whole has a favored climate for plant and animal growth. Furthermore, with few exceptions, it is a climate productive of a high degree of human mental and physical activity. The climate of each important section varies sufficiently so that each has its own characteristic products. This leads to an exchange of goods, and consequently of ideas, which has been stimulating to the cultural and economic life of France.

### GEOGRAPHICAL REGIONS

The relief of France as a whole is comparatively simple, in spite of the fact that a variety of topographical features are represented.

The central plateau, or Central Massif as it is frequently called, forms a core of old rocks bounded on all sides by lowlands of varying width. These lowlands in turn are bounded on the south and the southeast by the young folds of the Alps and Pyrenees, on the west by the Armorican



Massif, and on the east and northeast by the old blocks of the Vosges and the Ardennes. The basin areas surrounding the central plateau are all connected, so that communication is made easy and the whole country is bound together into a compact comprehensive unit. No section is

really isolated, and the ease of contact between the various natural regions has been one of the factors responsible for the marked degree of unity existing within the nation.

#### THE CENTRAL PLATEAU

The central plateau is the largest of the remnants of the Armorican Fold to be found in France, and it occupies approximately one-sixth of the area of the country. This upland reaches its maximum elevation, some 5600 feet, in the Cévennes, bordering the Rhône Valley. From here it slopes toward the west and northwest. It is thus largely drained by the Garonne and the Loire, only the eastern edge draining into the Rhône-Saône Basin. For the most part it is composed of old crystalline rock, but in the central part recent volcanic action has decidedly modified surface conditions.

**The Cévennes-Morvan District.**—The central plateau may be divided into four sections, each having physical conditions which lead to distinct types of human development. The eastern edge consists of the Cévennes Mountains in the south and central part, and the Morvan district in the north. The Cévennes are really the edge of the plateau which rises abruptly some 4000 to 5000 feet from the Rhône Valley. South of Lyon they consist of a high wall slashed with deep gorges. Here cross communication is difficult. In most cases the poor soil yields a meager return, and agriculture is not highly profitable. Sheep are grazed on the higher slopes in the summer, and are taken down into the plains of Languedoc during the winter. North of Lyon the relief flattens out, permitting easy cross communication. The importance of Lyon is materially increased by its contacts with the coal field near St. Étienne and other portions of the plateau. This northern section has better soils, and crops are more profitable than in the Cévennes, while the vine is extensively cultivated on the eastern slopes. Excellent pastures are to be found throughout much of the section, and grazing is an important activity.

**The Auvergne District.**—The central, or Auvergne, district is separated from the eastern section by the valley of the Loire. This is a region of recent volcanic activity, although no active cones exist at present. The decomposed lava provides a most fertile soil which, combined with the ample rainfall, makes the region well adapted for agriculture. The valley of the Allier and, to a less extent, that of the Loire form veritable garden spots where grains and sugar beets are raised in abundance, and prosperous orchards and vineyards occupy the lower

slopes. The whole Auvergne district is also noted for pastures, and cattle raising is an important activity.

**The Limousin District.**—The plateaus of the west are known as the Limousin district. This is an area of rounded hills, but it has the misfortune of being covered with a poor soil. Rye, oats and potatoes are the principal crops raised, but the yields are small and the region is sparsely populated. Grazing is carried on throughout much of the district, due to the many pastures resulting from the abundant rainfall provided by the Atlantic winds. Excellent deposits of kaolin clay have made Limoges famous as the home of the widely known Haviland china. Although the deep valleys hinder transportation, this region is crossed by important east and west and north and south rail lines.

**The Causses.**—The poorest sections of the plateau lie in the south, where the porous limestone table-lands form the region of the Causses. The surface is dry, giving rise to a steppe type of vegetation. The scanty population of the area depends upon the raising of sheep and goats which furnish the milk from which the famous Roquefort cheese is made. Deep gorges with abrupt walls hamper transportation, and much of this section is quite isolated.

#### THE ARMORICAN PLATEAU

The Armorican Plateau pushes its way westward into the Atlantic in the peninsulas of Brittany and Normandy. Rain soaked and fog mantled, with irregular coast line and many islands, they seem a region apart and distinct from the rest of the country. The people add to this impression, for they are largely of Celtic stock, many having come from Britain, and they speak a distinct Celtic language.

Many harbors, offshore fisheries and limited possibilities for the development of the land have turned the attention of many Bretons to the fishing industry. Hence maritime activities are highly developed, and from this section come the finest sailors of France. There are innumerable harbors, many of which are too shallow for large boats. Brest is the principal port of Brittany, but its importance as a naval station and its distance from Paris have hampered its commercial development. Cherbourg, at the end of the Norman peninsula, is one of the principal ports of call for the transatlantic liners, but is more important as a passenger than as a freight port.

The extreme marine climate of the region restricts the cultivation of many crops, but leads to an excellent growth of grass. Thus stock raising is the principal agricultural activity, cattle, swine and horses

being raised in considerable quantities. Dairying is particularly important, and many dairy products are shipped to Paris. This section is also a land of orchards, of apples, pears and plums. Consequently, it is a cider-drinking country, rather than a wine country like most of the rest of France. Along the north coast of Brittany seaweed provides an abundant and cheap fertilizer. Here market gardening and dairying are



A picturesque landscape in Brittany. (Courtesy of the French Line.)

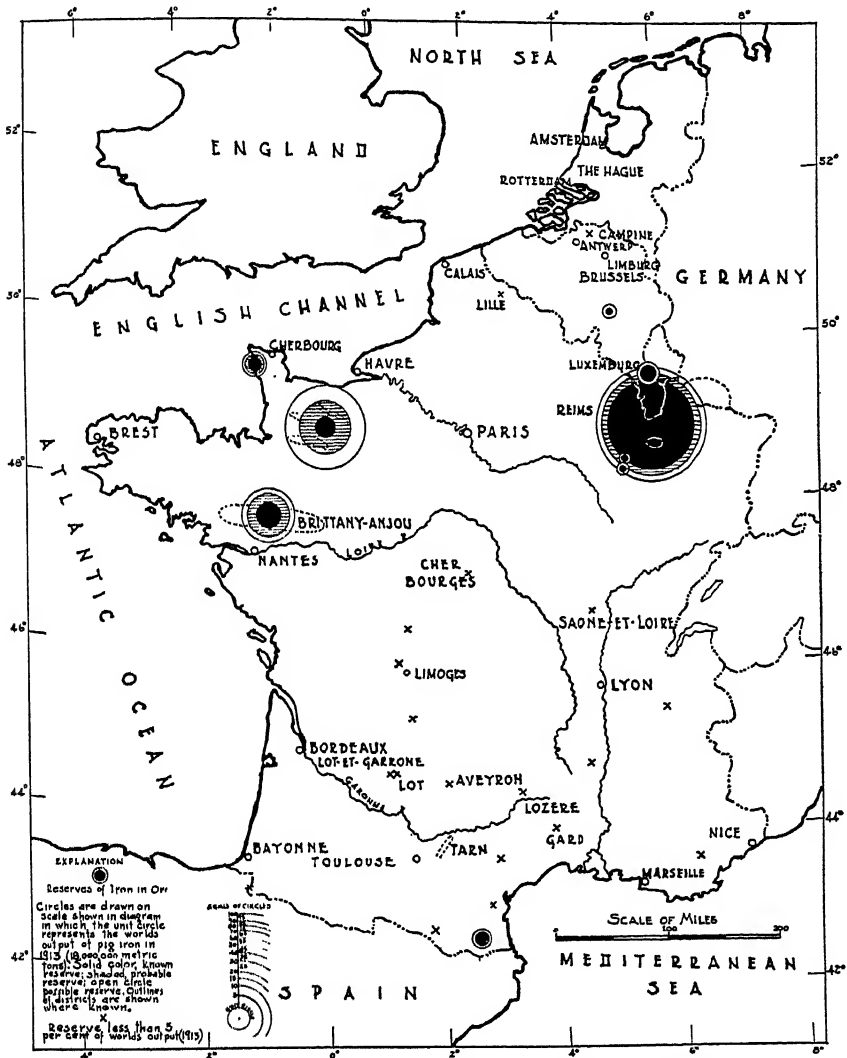
well developed, and much of the surplus products are sent to the English market.

#### ALSACE-LORRAINE

Alsace-Lorraine comprises the northeastern portion of France. Lorraine is a highland region of basins and sharp-edged plateaus. It drops in gentle terraces to the Paris Basin. Alsace consists of the eastern slopes of the Vosges, from their crest to the Rhine.

This is the meeting place of France and Germany, and is consequently of major strategic importance. Held successively by the two peoples throughout European history, its population partakes of the characteristics of each. The strategic position of the region has made it

a frequent battleground. Metz, Nancy, Verdun and St. Mihiel have long been important fortresses, and today along this part of the French border stretches the most powerful line of fortifications to be found



The iron ore resources of France. (U. S. Geological Survey.)

throughout the world. It is here that the Lorraine Gate provides the most direct line of contact between the Paris Basin and the Rhine Valley, and consequently it is here that military contacts between France and Germany are most likely to take place.

The region is of great importance also because of its valuable



resources. Lorraine is mostly rugged, and has limited agricultural possibilities. However, it has important forests and valuable minerals. The salt deposits near Château Sabines have been mined since ancient times, and today serve as the basis for an important chemical industry. By far the greatest resource is iron ore, for Lorraine contains 46 per cent of the valuable iron ore reserves of Europe. Around the mines have grown up important industrial centers specializing in the production of pig iron and crude steel. As a result of the World War, France added materially to her industrial strength by getting the iron deposits and the mills and furnaces of the section of Lorraine formerly held by Germany.

The only mineral wealth of Alsace consists of the potash deposits near Cernay. These are the second largest deposits of this mineral in the world, and large amounts are exported from Strasbourg. However, Alsace is primarily agricultural. The protected climate and fertile soil lead to the intensive growth of the vine, tree fruits and tobacco, and excellent pasturage on the slopes of the Vosges supports many cattle. Here dairying is important, and considerable numbers of sheep were once raised. The wool led to the development of a textile industry which has since changed to cotton. Alsace possesses 2,000,000 cotton spindles, and Mulhouse and Colmar are the leading textile centers. Strasbourg is an important manufacturing and commercial city. Although located on the Ill a few miles from the Rhine, it is the chief Rhine port of France. It also controls important routes to the west by way of the Zabern Pass, and is connected with the Marne and the Seine by canals.

#### THE JURA-ALPS REGION

The Alps and the Jura form effective barriers along the Swiss and Italian borders. Both are portions of the young Alpine Fold. However, they are characterized by diversity, nearly every type of mountain scenery and mountain formation being represented. Topographic and climatic differences lead to human differences which are most interesting.

The southern Alps extend to the Mediterranean, and aid in giving to the Riviera one of the most magnificent coast lines to be found throughout the world. Near the coast pine forests clothe the slopes, but a short way in from the shore the mountains become a jumble of gray or brown treeless slopes and narrow valleys. Here poor soil supports a scrubby growth of Mediterranean evergreens. In the most fer-

tile of the valley bottoms almond and olive groves appear, and the slopes are used as summer pastures for numerous flocks of sheep. Tiny villages, many of them walled, cling to the slopes or perch precariously on the lower peaks. Around such towns the slopes are terraced, and laborious hand agriculture produces a few crops. Many of these towns and terraces have been partially abandoned as the need for protection, which accounts for their location, has passed. New towns have sprung up in the valley bottoms near the roads and railroads. Some of these villages give the appearance of having flowed downhill, as changing conditions made the valley floors more desirable. Throughout much of this region the standard of living is low, and many of the villages are entirely without modern conveniences.

Grenoble on the Isère, the old capital of Dauphine, is the principal city of the French Alps. It is noted as a glove-manufacturing center, and is famous for its old university which attracts students from all sections of the world. The city lies in what is known as the sub-Alpine depression, a long, low zone extending from the Swiss border to the district somewhat south of Grenoble. This separates the pre-Alps, or lower elevations to the west, from the higher Alpine ridges to the east. This depression, with its alluvial soils and hot damp summers, is intensively cultivated, and its water power has made it important for the manufacture of aluminum and chemicals.

North of Grenoble the increase of summer moisture causes the appearance of the Alps to change. Forests appear as dark green blots on the mountain sides, while the mountain grasses provide a light green carpet covering the unforested slopes and the valley floors. Wild flowers grow in profusion and add a delightful touch of color to the landscape. Snow fields hide in the protected valleys near the summits, and glaciers cling to the highest peaks. Some of the most magnificent mountain scenery in Europe is found in the French Alps, which contain Mont Blanc, the highest of the Alpine peaks. Here the grazing of cattle becomes important, and dairying is actively carried on. The cattle are taken to the upper Alp pastures in the summer and down to the valleys for the winter.

The Jura Mountains divide from the Alps and form a distinct chain to the northwest. They consist of a series of roughly parallel ridges which are bound close together at either end, but which are widely separated in the center. These ridges are not unlike the newer Appalachians of Pennsylvania, except that they have been less eroded, and are consequently more rugged. Along the slopes bordering the

Saône Valley are valuable vineyards, but most of the region is forest covered, lumbering and dairying being the principal occupations.

#### THE RHÔNE-SAÔNE BASIN

From the point of view of civilization, the Rhône-Saône Basin is the oldest lowland in France, and has played an important part in the historical and economic life of the nation. It consists of the valleys of the Rhône and its chief tributary, the Saône, and extends from the Vosges to the Mediterranean. In the north it is connected with the Rhine Valley by the depression between the Vosges and the Jura known as the Belfort Gate, and with the Paris Basin by the Côte d'Or. In the south it widens out to include the Mediterranean coastal plain, extending from the Alps to the Pyrenees.

The Saône Valley was formerly occupied by large lakes. The clays and sands deposited on these lake bottoms formed fertile soils. Today this area is wide and flat, but the sections bordering the river are so poorly drained that they are used only for pasturage. The climate is of a modified continental type, with cold winters and warm summers and moderate rainfall. Most of the valley is a rich agricultural district, wheat and corn being raised in considerable quantities. Cattle and poultry are very abundant, and rich meadow lands are everywhere in evidence. Trees are more noticeable than in the Paris Basin. They line the stream banks and the roads, and cluster around the picturesque towns. Part of them are fruit trees, and fruit is an important product of the valley. Bordering the western side of the valley, along the slopes of the Côte d'Or, some of the finest vineyards in the world produce the famous Burgundy wines. Although the population is dense, there are few cities of any size. Dijon, the old capital of Burgundy, is an important commercial city and wine center. It is located where the routes from the Paris Basin meet the valley. Belfort, on the opposite side of the valley, manufactures textiles and small metal goods.

Just north of Lyon is a district known as the Dombes, a region of glacial moraines. Until recently it was unhealthful, due to a number of small ponds constructed by the monks during the Middle Ages. Recently these have been drained, and the region is now highly productive.

Lyon has a strategic location where the route between the Mediterranean and the North Sea crosses that from Bordeaux and the west to Italy. It is also located near coal fields, especially those around St. Étienne, and in addition has abundant water power. The raising of

silkworms in the Rhône Valley gave it a start in silk manufacturing, and it is now the leading silk center of Europe. It also manufactures some metal products, especially automobiles.

Below Lyon the valley narrows, and consists of a series of narrow defiles linking a chain of basins increasing in size toward the south. Agriculture is carried on, with orchards and vineyards on the lower slopes and cereals on the valley floor. Abundant water power leads to the manufacturing of cement and aluminum along the eastern side of the valley. Below Valence vegetables and small fruits become important. These are for the most part shipped to the northern markets. The mulberry tree and the almond are also raised, and the olive appears on the southern slopes. The delta of the Rhône is of recent formation, and, where drained, is planted in vineyards and eucalyptus. However, it is mostly unhealthful and is used largely for grazing.

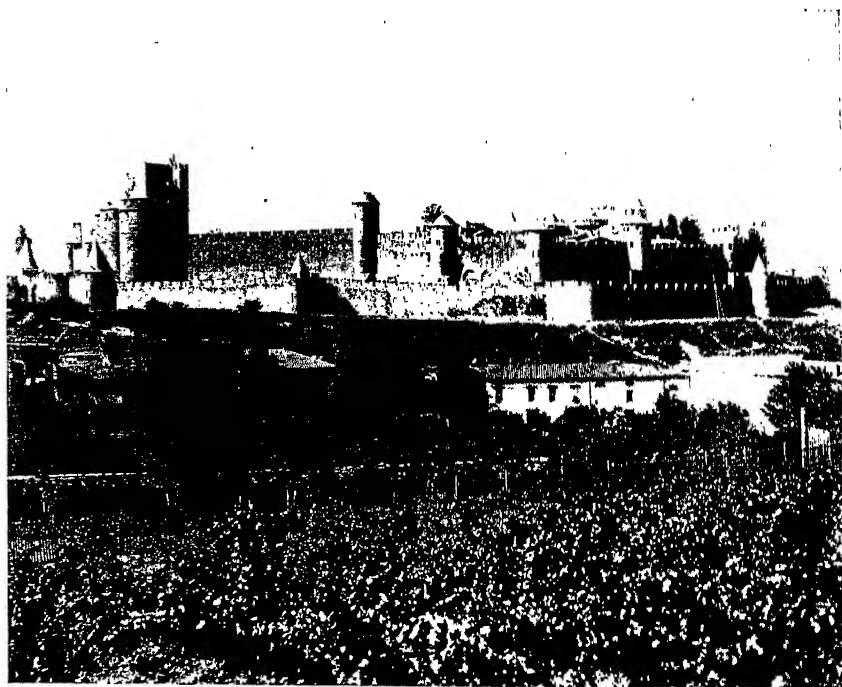
The section of the Mediterranean plain to the west of the Rhône is formed by eroded material brought down from the central plateau, and is known as Languedoc. Much of the alluvial soil is fertile, and the region is one vast vineyard, producing from one-third to one-half of all the wine of France. The principal cities, Nîmes, Montpellier and Narbonne, are really islands in a vast sea of vines. The coast line of Languedoc is straight and low, with frequent bars and reefs. Sète (Cette), with its artificial harbor, is the only important port.

East of the Rhône stretch the plains of Provence, composed largely of eroded material from the Alps. These plains differ from those of Languedoc in that hills occur frequently. Their bare, white slopes and sharp crests provide the sites of old towns, many of which date back to the Phœnician or Greek period. The plains between these hills are principally devoted to olive groves and vineyards, and sheep and goats graze on the sparse vegetation of the slopes. This section contains large deposits of bauxite, and aluminum is manufactured in considerable quantities. Farther to the east the mountains crowd closer to the sea; and the narrow and interrupted plains, being effectively protected from the cold winds of the north, produce oranges, lemons and other delicate citrus fruits. Here also wide areas of flowers provide the basis for a perfume industry.

Some distance east of Marseille is the beginning of the Côte d'Azur, or the Riviera, as it is more frequently called. In this section nature has striven successfully to create an ideal pleasure ground. The lofty Maritime Alps come to the sea, creating an irregular coast line with many bays and islands. The browns and reds of the abrupt cliffs and the dark

green of the forested slopes and islands contrast with the deep blue of the Mediterranean, while the white towns on the shore line add a touch of contrasting color which aids in making the whole region a picture of surpassing beauty. Here the tourist industry is well developed, such centers as Cannes, Nice and Menton being especially important.

Marseille, located some thirty miles to the east of the mouth of the Rhône, is the first seaport of France, and one of the most important



Vineyards crowd close to the walls of Carcassonne. (Courtesy of the French Government Tourist Information Bureau, New York.)

ports of the Mediterranean. It is cut off from the Rhône Valley by a ridge of limestone hills, through which both railways and the Rhône Canal pass in long tunnels. Marseille handles nearly all the trade of France with the Mediterranean districts and the east, and is also the point of contact between France and its African colonies. In addition to its commercial activities, it is an important manufacturing center. It refines large amounts of oil, and manufactures soap. This industry was originally based on local supplies of olive oil, but today the oils are largely imported from west Africa. Many other colonial raw materials have given rise to prosperous industries. The industrial and commercial

activities of the city have attracted to it a large population, and it now ranks second in size among the cities of France.

The Rhône-Saône depression and the bordering plains to the south have served as a giant funnel through which Mediterranean influences have poured into France and northern Europe. The Roman and Greek influence is strong in the south. It is reflected in architecture and law, and in the character of the population. Many of the old towns reflect the history of this region. For example, Marseille was built by the Phœnicians in 600 B.C., and was occupied successively by the Greeks, the Carthaginians, the Romans and the Saracens. Nearly every important town has its Roman ruin. Orange with its Roman theater and triumphal arch, Arles with its theater, and Nîmes with its arena, represent but a few examples of the Roman structures to be found. The churches of the south also reflect the Roman influence in their round arches, in contrast to the pointed Gothic arch used farther north.

The valley has long been important for trade, for it provides the most direct route from the Mediterranean to the North Sea. Through it have passed goods typical of the two areas. Through it also passes the trade between the Paris Basin and the French colonies in Africa. Today it is much used by goods going to or from the east by way of Marseille and the Suez Canal. While the swift current and the character of the channel render much of the Rhône unsuitable for navigation, the valley serves as a convenient and easy route for railways and roads. It is not surprising, therefore, that it has long been one of the more important routes in Europe.

#### THE BASIN OF THE AQUITAINE

In southwestern France is a well defined region known as the Basin of the Aquitaine. It is the second largest lowland district in France, occupying the section between the central plateau, the Pyrenees and the Bay of Biscay. In spite of its surrounding highlands and waters, it is not isolated. In the north the gateway of Poitou, between the central plateau and the Armorican highland, permits easy communication with the Paris Basin. In the south the gateway of Toulouse, or the Gap of Carcassonne, as it is frequently called, provides a passageway to the plains of Languedoc and the Mediterranean. Through this southern gate runs the Canal du Midi, one of the oldest canals in France, connecting the headwaters of the Garonne with the Mediterranean. The basin is largely drained by the Garonne and its tributaries.

The Basin of the Aquitaine consists of three major divisions. To

the north is a rolling plain consisting of a continuation of the formations of the Paris Basin. Here the fertile limestone soil and the mild marine climate are responsible for prosperous agricultural communities. In the northwest are an important dairying section and many vineyards. Cognac, one of the most famous liqueurs of France, is manufactured in this district. To the east the country rises in a series of plateaus, which are really outlying portions of the central plateau. These are formed of porous limestone, and the surface is consequently dry. The valleys in this section produce wheat, tobacco and corn; vineyards cover



The valley of Lesponne in the Pyrenees. (Courtesy of the French Government Tourist Information Office, New York.)

the lower slopes, and the surface of the plateau is used for sheep grazing.

In the south is a great alluvial fan of material eroded from the Pyrenees. This is known as Le Lannemezan, and is the heart of ancient Gascony. It is a land of sand, gravel and boulders, and is of but slight value for arable farming, except for the alluvial soil of the valleys. The fan is deeply dissected, making transportation difficult and isolating important areas.

Between the northern and southern sections is the narrow valley of the Garonne. The river itself is variable, carries large amounts of sediment, and is subject to disastrous floods. However, the valley soils are very fertile, and cornfields and vineyards occupy much of the

valley floor. This is one of the great wine centers of France, producing an unusual amount of high-quality vintage. Toward the northwest the valley widens into the Gironde estuary. Here again vineyards occupy nearly the entire landscape, and such famous wines as Médoc and Sauterne are produced.

Bordeaux, on the lower Garonne, is the commercial center of the entire basin. It is the greatest wine-exporting port in France, and in addition sends out lumber and stone. Some manufacturing takes place, but the city is primarily commercial in its interests.

South of the Garonne, near the coast, is a district known as the Landes, which consists of a triangular plain whose base is the coast of the Bay of Biscay, and which rises to an elevation of 3000 feet toward the east. It is a sandy region, and a short distance below the surface the sand has consolidated into impermeable sandstone. Near the coast it was formerly a region of shifting dunes, while inland it was covered with moors and marshes. Recently the French government, through a program of forestation, has changed this area into a great pine forest, and today it produces large amounts of timber and naval stores and supports a prosperous population.

#### THE PARIS BASIN

The Paris Basin is the most important region of France, and one of the most productive sections of the world. It occupies the northern quarter of the country, being bounded on the south by the central plateau, on the west by the Armorican highlands and the Channel, on the east by the Ardennes and the Vosges, and on the north by the Belgian border. Toward it converge lines of communication leading from every other section of the country. By way of the Gate of Poitou it maintains close contact with the Aquitaine and the southwest. By way of Dijon routes lead to the Rhône-Saône Basin and the Mediterranean. The Lorraine Gate makes communication easy with Alsace, Lorraine and Germany. Toward the north the Flanders Gate provides contacts with Belgium, The Netherlands, and northern and eastern Europe. The Paris Basin is thus the focal point from which routes radiate to all portions of France and Europe. This has not only aided in making the basin the center of French life, but has enriched its cultural and economic life by contributions from every section of the continent.

As its name implies, the region is a basin, but relief is varied. Structurally it may be compared to a pile of saucers, each smaller than the one below. The edges of the saucers correspond to a series of con-



centric escarpments surrounding Paris, and this city may be conceived as occupying the center of the smallest saucer. These escarpments present a steep outward slope away from Paris, while their inner slopes dip gently toward the center of the region. Transportation routes and many important cities are located where streams break through these uplands. The military defense of Paris is based upon the defense of these crests. The ridges are mostly of limestone or chalk, and are used for either grazing or forests. The plains between the crests are chiefly clay-covered and fertile, although occasional sandy areas support for-



Harvest scene in the southern part of the Paris Basin. (H. J. Smith.)

ests. Toward the south and the west the ridges nearly disappear, and plains dominate.

The southern part of the basin is the least favored section as concerns agricultural and industrial possibilities. It consists either of limestone regions which are used for grazing or wheat raising, depending upon the depth to which the soil covers the limestone, or of sandy soils which support moors or forests. Between Orléans and Paris lies the district of Beauce. Here a loamy soil covers a limestone formation, and, although it is quite dry, there is sufficient moisture for the raising of wheat. This grain covers the landscape as far as the eye can see, and is in no small part responsible for the fact that the Paris Basin produces three-fifths of the home-grown wheat of France.

Binding these southern regions together, and leading to a certain

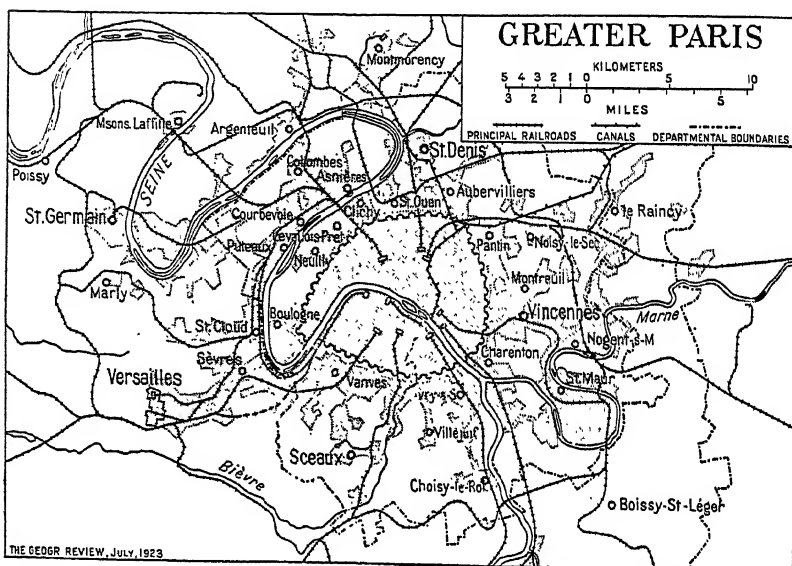
amount of unity in spite of variations in physical conditions, are the Loire and its tributaries. These streams have eroded deep valleys in the limestone, and the abrupt walls of the valleys contain many caves which even today serve as homes for entire communities. The soils of the valley floors are excellent, the slopes provide shelter, and the direction of the streams leaves them open to the influence of the winds from the Atlantic. Consequently, they are excellent for agriculture, and support a dense and prosperous population. Orchards, vineyards, wheat fields and gardens are interspersed in such a way as to present a most pleasing picture. The importance of the valley, both as a productive center and as an avenue of communication, is shown by the number of cities which line its course. Orléans, Tours, Angers and Nantes are the largest of these cities; each is the center of a productive district, and each controls important transportation routes.

The northwestern portion of the basin is better situated from the point of view of agriculture than is the south. A moderate and moist marine climate, together with fertile marl and limestone soils, causes this to be one of the most prosperous agricultural sections of France. It is a region of rich meadows and orchards, interspersed with fields of grain. The delightfully colored brick or tile houses of the villages, the ever-present flowers and the well cultivated fields form a most attractive landscape. The agriculture is of an intensive type. Almost no waste land is to be found. Even fences are frequently dispensed with in order that every inch of land may be utilized. The tops of the occasional ridges are covered with carefully tended stretches of timber, but all other ground is used for pasture or crops. The raising of animals is especially important, and this district supplies Paris with large amounts of beef, butter and cheese. Fine horses are also common, this being the section from which the well-known Percheron draft horses come.

The coast line of the northwest contains few good harbors, but it is important as a resort center. Deauville is the most famous of the resorts, but the picturesque coast line and excellent bathing have caused many other smaller centers to develop. The chief ports are Rouen and Le Havre, located on and at the mouth of the Seine, respectively. In addition to being the chief gateway to the Paris Basin, Rouen is an important textile manufacturing center, cotton in particular being spun and woven. Le Havre is the leading port engaged in transatlantic commerce, and is one of the most active of the nation's ports. Farther north along the coast is Boulogne-sur-Mer, the greatest fishing port of France, but of slight commercial importance. Dunkerque and Calais

are the two ports through which most goods and passengers move going to and from the British Isles.

The northern portion of the basin is both an agricultural and an industrial region. The clay soil of Flanders not only is responsible for the mud so well remembered by many of the soldiers during the World War, but it also supports prosperous agricultural communities. Wheat, barley, sugar beets and hops are raised in considerable quantities, and excellent pastures support large herds of cattle. Here also the greatest



Map of greater Paris. (From "The Origin and Growth of Paris," by L. Gallois; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

of the industrial regions of France are responsible for this being the most populous section of the country. The industrial towns center around Lille, and are especially noted for their textiles. Lille specializes in cotton, while the neighboring towns of Roubaix and Tourcoing are the greatest wool centers of France. Slightly south of this region is another industrial area surrounding the coal fields. This is the chief coal-producing region of France, and contains the coal measures which dip under the Channel from Great Britain and extend through France and Belgium into Germany. Here the landscape consists of small mining towns, smoky chimneys, dirty shaft houses and great black piles of waste. Lens, Douai and Valenciennes are the principal industrial cities of the region, and specialize in metal goods, chemicals and glass.

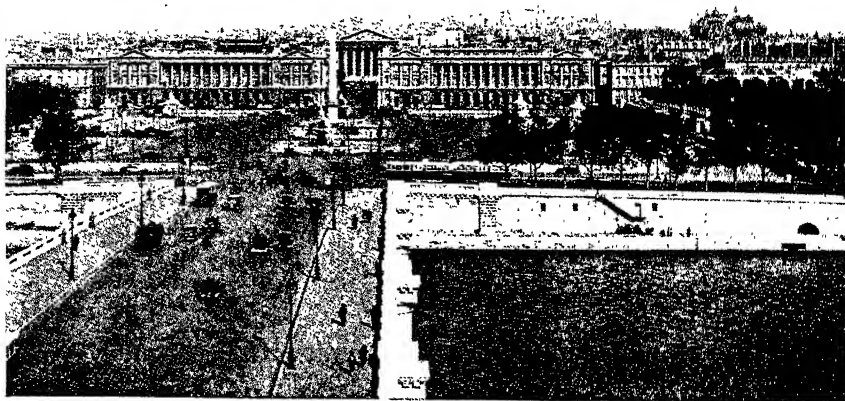
The eastern portion of the basin is a ridge and valley area, the valleys being really plateaus whose edges form the ridges. The more level areas are intensively cultivated, and vegetables, sugar beets, wheat, tree fruits and the vine are all raised in considerable quantities. Only where the valley floors are composed of porous limestone, as in Champagne Pouilleuse, is cultivation of but slight importance. The ridges are mostly forested, but their southern and southeastern slopes support prosperous orchards and vineyards. Thus the famous vineyards of Champagne are located on the slopes of the plateau overlooking the district of that name. Many of the towns are located on the slopes of the ridges at the juncture of the limestone and the clays. Here the water which seeps through the limestone comes to the surface in springs. Reims and Epernay have locations of this type.

Paris.—For nearly a thousand years the French monarchs drew to their capital leaders in all phases of cultural accomplishment. Sculptors, artists, musicians, architects, poets, philosophers and many others were attracted by the glory of the French court. Beginning in the thirteenth century, students of all nations began to swarm toward the city, attracted by the fame of the great schoolmen of the University of Paris and the Sorbonne. This continuous influx of cultural leaders and students profoundly modified the French capital, and left it a rich heritage of beauty, gayety and artistic accomplishment. These men aided in laying out its magnificent boulevards and in designing its imposing churches and palaces. They filled its libraries and galleries with the best the world had to offer in literature and art. They also played a part in making the café the center around which all Parisian life gravitates, and in giving to that life a gayety and vivacity which makes Paris unique among the great cities of the earth. Little wonder that it has become the Mecca of travelers from every land, or that it is almost universally regarded as the cultural capital of the world.

Paris is the center of economic as well as cultural activity within the Paris Basin. Its situation at the lowest point in the basin causes such important rivers as the Seine, the Marne and the Oise to converge toward the city. These are navigable waterways, and the traffic which they carry is responsible for the fact that Paris is the first port of France. All sections of the basin not touched by these rivers are closely tied to Paris by rail and canal, and the city is the terminal of every great rail line in the country. Paris is thus the commercial center of the basin; and, as its hinterland is the most productive of any in France, it is natural that it is the leading city of the country, the entire

urban area having today a population of nearly 4,500,000. Through the various gateways of the basin it has contact by rail and canal with all sections of Europe. This enhances the commercial importance of the city, and has brought to it cultural and ethnic contributions from every corner of the continent.

Paris not only is noted as a commercial center, but is the leading manufacturing city of France. Its industries are mostly concerned in turning out goods in the production of which taste, care and originality



La Place de la Concorde, one of the most beautiful and celebrated squares of Paris.  
(Courtesy of the French Line.)

play an important part. The skill of its artistic population is thus utilized, and its products have a world demand.

#### AGRICULTURE

France is unusual among the western European powers in that agriculture is its most important economic activity, and the one upon which much of its prosperity is based. Some 41 per cent of its lands are devoted to crops, 5 per cent being in orchards and vineyards and 24 per cent in meadows and pastures. The cultivation of these lands engages the attention of as many people as are employed in manufacturing and commerce combined; but despite this great activity, France is gradually becoming dependent upon outside sources for a portion of its food supply. Prior to the World War, the nation produced approxi-

mately enough food to meet its own demands, but by 1930 it had an import balance of nearly \$185,000,000 in foodstuffs.

**The Character of French Agriculture.**—France is a land of small farms and intensive cultivation. The average farm contains less than 25 acres; however, due to the existing inheritance laws, these holdings are seldom in one piece, but are usually scattered in blocks of a few acres each around the village in which the farmer lives. This division of the land seriously retards the use of machinery and of efficient agricultural practice. As a consequence, backward hand cultivation is still characteristic, and the yield per acre is less than in Great Britain, Belgium, Germany and most other portions of northwestern Europe.

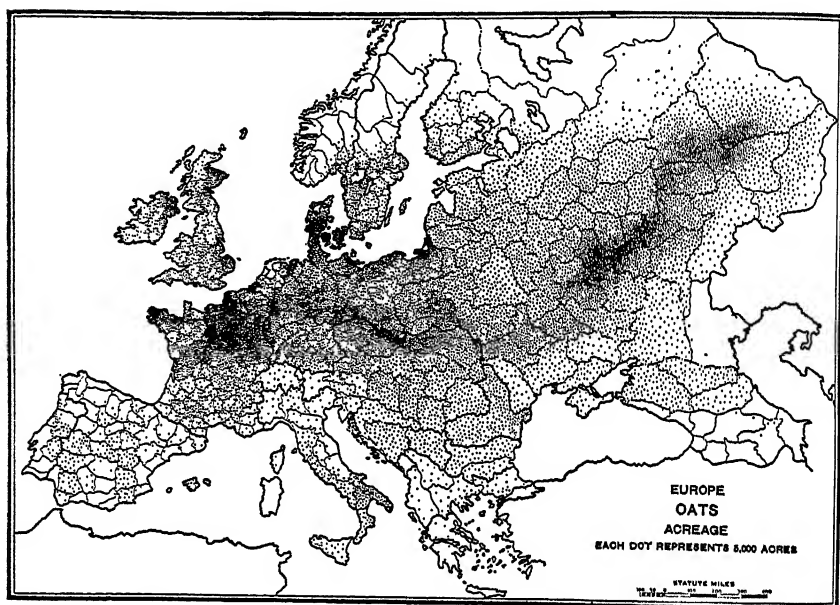
**Trends in French Agriculture.**—Within recent years there has been within France a decided shift of population from the country to the cities. So serious has this movement become that it threatens to destroy the balance between industry and agriculture which has been the corner stone of the French economic structure. One result has been to decrease the proportion of the population engaged in farming, and to change the character of agricultural labor. Women have been replacing men in the fields, as is evidenced by the fact that between 1896 and 1922 the number of male agriculturalists decreased from 5,675,000 to 5,061,000, while the number of women workers increased from 2,755,000 to 3,962,000. The war played but a small part in this change, as the trend was well developed before 1913.

Although diversified agriculture still predominates throughout the country, the raising of animals is increasing at the expense of crop acreage. In spite of protective tariffs, the French farmer has had difficulty in meeting foreign competition in grains and other easily transported food products. The result on crop acreage may be seen from the fact that the area devoted to wheat declined 20 per cent between 1913 and 1930. There has also been a decline in every other major crop except sugar beets and forage crops. Even the production of meat has shown some tendency to decline, due to the fact that improvements in refrigeration are encouraging imports from overseas. Accordingly, increasing attention is being given to the raising of cattle for dairy purposes, for the products of this form of agriculture have little to fear from foreign competition.

**Livestock.**—Most livestock is raised on the small farms as one phase of diversification. Only in the more rugged districts and on the poorest soils is this activity carried on to the exclusion of other types of agriculture.

Dairying is especially important on the west coast, north of the Gironde. Here the cool, moist climate and rugged relief discourage cultivation and encourage grazing. Other cattle centers are in the central plateau, the French Alps and the Jura. The country is an exporter of cattle, butter and cheese, although it imports considerable amounts of meat.

Horses are raised chiefly in the north, while swine are located in the south and west. Sheep are most important in southern France,



The cool, moist climate combined with the abundance of domestic animals favors the raising of oats in northwestern Europe. (U. S. Department of Agriculture.)

although they are also plentiful on the limestone ridges of the Paris Basin.

The importance of the livestock industry is indicated by the fact that some 70 per cent of the cash income of the average French farmer comes from the sale of animals and animal products. Today the country is approximately self-sufficient from the point of view of such products, and should continue to produce at least enough to satisfy its own needs in the future.

**Cereals.**—Wheat is the cereal crop of major importance in France. The nation ranks second only to Russia among the European states in its production. An additional appreciation of its importance may be gained from the fact that approximately 10 per cent of all French ter-

ritory and 23 per cent of all land devoted to crops are planted in this grain. The relative importance of this crop is due in part to favorable natural conditions and in part to protection and subsidies by the French government. Approximately three-fifths of the total acreage is located in the Paris Basin, and the remainder is scattered among various other sections, of which the Aquitaine and the Saône Valley are the most important. Due to the lack of scientific cultivation and the use of some relatively poor lands, the yield per acre is lower than in any other northwestern European country.

Oats ranks second in acreage to wheat among the grains and among all crops. It is grown chiefly in the north and northwest, where climatic conditions are most suitable and the animal population most dense. Small quantities of barley and rye are raised at scattered points, while corn appears in the favorable climate of the Aquitaine. In general, the cultivation is most thorough and scientific in the north, and consequently the yields per acre of all grains are greatest in that region.

TABLE 75  
ACREAGE AND YIELD OF PRINCIPAL CROPS  
(U. S. Department of Commerce)

Crop	Area (thousands of acres)		Production (thousands of units— bushels, except as indicated)	
	1909-1913	1926-1930	1909-1913	1926-1930
Wheat.....	16,500	13,018	325,644	269,676
Oats.....	9,829	8,625	368,465	355,084
Rye.....	3,095	1,928	52,502	33,929
Barley.....	1,988	1,774	52,827	51,330
Corn.....	1,155	832	22,290	18,505
Potatoes.....	4,066	3,656	526,789	511,609
Sugar beets.....	612	603	5,937 <sup>a</sup>	6,084 <sup>a</sup>
Grapevines.....	4,017	3,501	1,326,821 <sup>b</sup>	1,348,776 <sup>b</sup>
Hay.....	7,692 <sup>c</sup>	7,226 <sup>d</sup>	13,643 <sup>a c</sup>	11,632 <sup>a d</sup>
Fodder beets.....	1,789 <sup>c</sup>	1,926 <sup>d</sup>	25,220 <sup>a c</sup>	25,289 <sup>a d</sup>
Green forage.....	1,922 <sup>c</sup>	1,812 <sup>d</sup>	15,623 <sup>a c</sup>	12,287 <sup>a d</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> Unit, gallon of wine.

<sup>c</sup> 1913.

<sup>d</sup> 1927-1930.

**Grapes and the Wine Industry.**—The warm sunny climate of southern France is ideal for the growth of the vine, and has played a large part in making France the leading wine-producing nation of the world. Although it is exceeded by Italy in the acreage devoted to grapes,



France has been able to maintain its lead in production through careful and scientific cultivation.

The plains of Languedoc and the delta of the Rhône are well suited for the growth of the vine. The long, hot summers and the light soils common to much of the area are responsible for this being the principal vineyard district of France. It normally furnishes approximately one-half of the wine of the entire country. This wine, however, is largely of ordinary grade, and cheap. The second district of importance is the Bordeaux section of the Aquitaine. This region tends to specialize on high-grade wine, and is important for its exports. The Rhône-Saône Basin and the valley of the Loire are also noted for their vineyards. On the sunny slopes of the limestone escarpments of the eastern Paris Basin are some of the most valuable vineyards in France. Champagne, the most famous of the local wines, has given to this region a world-wide reputation. With regard to the country as a whole, it can be said that the lighter wines are produced in the south and the west, while the stronger wines are most typical of the east.

The production of wine is an industry of major importance in France, and formerly this product was the leading export of the country. Much is still exported, but imports are nearly twice as valuable as exports. The local wine consumption is tremendous, over a barrel a year per capita. However, the industry has recently been faced with a difficult situation. Per capita consumption within the country has declined approximately 10 per cent since pre-war days. Exports have also declined, due to reduced consumption in other countries. These factors have reduced the price of wine, and resulted in a slight decline in the acreage devoted to vineyards.

#### NATURAL RESOURCES

France possesses the greatest iron ore reserves of Europe, and is well supplied with such other minerals as bauxite and potash. However, it is seriously handicapped by the lack of coal supplies adequate to meet its needs. Abundant water-power resources partially compensate for this deficiency, but large coal imports are nevertheless necessary. The nation is fortunate in having forest reserves which, as a result of careful supervision, are nearly sufficient to meet domestic timber demands.

**Iron Ore.**—The return of Lorraine following the World War increased French iron reserves to such an extent that this nation now contains 46 per cent of the usable iron ore of the continent. These tre-

mendous resources have enabled France to produce approximately one-half of the iron ore mined in Europe, and to lead all nations of the world in the export of this product.

The "Minette" ores of Lorraine are not of high quality, for they average only between 30 and 40 per cent metal. They also contain phosphorus, and were not usable for steel until the development of the Thomas process in 1880. Fortunately, much of the ore is calcareous, and thus self-fluxing, which eliminates the necessity of adding limestone and reduces the cost of production of the pig iron. The ores are found in such tremendous amounts and are so easy to mine that these advantages more than compensate for the low quality of the ore. This low quality makes it unprofitable to ship the ore long distances, and encourages the importation of coal and the smelting of the ore near the mines.

France has other reserves of iron ore, those of Normandy, Brittany and the eastern section of the Pyrenees being the most important. These deposits were worked extensively during the World War, but normally they yield less than 10 per cent of the ore mined in the country.

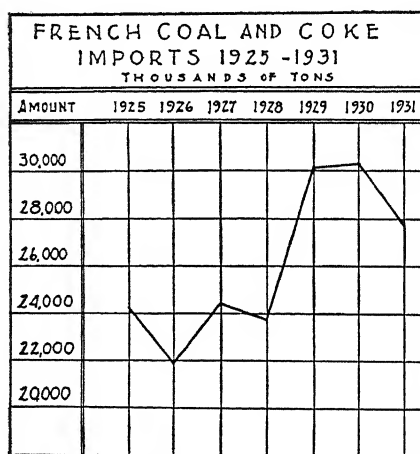
**Coal.**—Although France contains numerous coal deposits, it is unable to produce a sufficient amount to meet its own needs. It has normally ranked third in production among the European states, but has to import nearly half as much as it produces, and is the leading coal importer of the continent. The insufficient supplies of coal are a decided handicap to the metal industries of France. Between one-half and two-thirds of the coal and coke consumed by the iron and steel industries of Lorraine must be imported, thus continuing the dependence of the Lorraine industry on Ruhr coal.

The coal fields of northern France produce some two-thirds of the total output of the country. This coal is of fair quality, and is usable for coking, although the thin seams and the fact that the beds average 1200 feet in depth make mining costs high. Many of the mines were partially destroyed by the Germans toward the close of the war, but they have been reopened and fitted with up-to-date equipment, so that production is greater than ever before. Coal fields also occur near the edge of the central plateau in the neighborhood of St. Étienne and Le Creusot. Other smaller deposits are widely scattered throughout the country.

The coal mines of the Saar Basin were given to France by the Peace Treaties in compensation for the destruction of the French mines. The coal production of this region averages nearly 13,500,000 tons

yearly, and although it is not of coking quality, its proximity to the Lorraine industries makes it of considerable value. However, the title to this territory is likely to return to Germany in 1935, and these coal fields will again constitute a portion of the German reserves.

**Bauxite.**—France contains approximately 60 per cent of the bauxite reserves of Europe, and is responsible for some 55 per cent of the continent's production of this mineral. It is the greatest producer not only in Europe, but in the world. Bauxite is found on both the east and west sides of the Rhône, but the plains of Provence have the greatest reserves and constitute the greatest producing center. Where



French coal and coke imports, 1925-1931. In thousands of metric tones. (U. S. Department of Commerce.)

water power is available, at the inner edge of these plains, important industrial centers have developed where the mineral is turned into aluminum. In addition to producing what is used at home, France exports large amounts of bauxite to other European countries.

**Potash.**—Near Mulhouse in Alsace are the second largest deposits of potash in Europe or in the world. These reserves are extensively used, the average production for the five-year period 1925-1929 being 390,000 metric tons,  $K_2O$  content. This places France second to Germany in production, and it occupies the same position in exports. Normally nearly one-third of the potash produced is exported.

**Water Power.**—France ranks fourth among the European states in potential water power, being surpassed only by Russia and the Scandinavian countries. Of the 5,400,000 horsepower of potential power, over one-half is to be found in the Alps, and the remainder is

divided among the Vosges, the Jura, the Pyrenees and the central plateau. Water power is thus well located to meet the needs of the country, for all of these regions are deficient in coal.

The development of water power has been especially rapid during and since the World War. Today slightly over 2,000,000 horsepower have been developed, or more than in any other European state, with the exception of Italy. Most of the resulting electricity is used for local power and light. France is carrying out a program for complete electrification in order to raise the general living standards and to supply local industries. By 1928, 52 per cent of the communes had been supplied with electricity, and by 1934 the program had been completed in all except a very few of the most isolated communes. Electro-metalurgical and electro-chemical industries also use large amounts of power, the aluminum industry being especially important in this connection.

### MANUFACTURING

While not as highly industrialized as the majority of its neighbors, France is nevertheless an important manufacturing nation. It ranks high among the European powers in such important industries as textiles, iron and steel, machinery and chemicals. This productivity is partially the result of changes which have been especially rapid since the World War.

French industry has developed slowly, and agriculture has remained of greater importance than in most other western European nations. Prior to the World War, the greater part of French industry consisted of small units specializing in the production of quality goods, in the making of which individual skill and artistic ability were the prime factors; but large-scale industries producing standardized products were extremely rare. Such a condition was attributed by some to the lack of resources, especially coal, and by others to the temperament of the French people. Doubtless both factors played a part, and the inherent conservatism of the French peasant was also important.

The war awakened France to the necessity of industrialization if it was to retain its place among the major powers. It also placed in French hands additional resources and industrial equipment. As a result of these changes, manufacturing has advanced rapidly, and France can now assume a place among the major industrial powers of the world.

**The Location of French Industry.**—The most important industrial section of France is in the north near the coal fields. Lille, Lens, Tourcoing and Roubaix are among the largest centers in this region. The district produces a diversity of products, among the more important of which are wool and cotton fabrics, steel and machinery. Another important region has arisen in the east, where the iron ores of Lorraine make the production of pig iron and crude steel the leading industries. The wool and cotton mills of Alsace-Lorraine have also increased the textile production of France by nearly one-fourth. Paris itself constitutes a third section, within which production depends upon a large and skilled labor supply. Clothing, fine metal work and high-grade furniture are characteristic products. Lyon is the center of a fourth region.

• WOOL AVAILABLE FOR CONSUMPTION - 1926-30 • (IN THOUSANDS OF POUNDS)						
COUNTRY	100,000	200,000	300,000	400,000	600,000	800,000
UNITED STATES						
FRANCE						
UNITED KINGDOM						
GERMANY						
ITALY						

Wool available for consumption; average, 1926-1930. In thousands of pounds. (U. S. Department of Commerce.)

The city itself is the greatest silk-manufacturing district in Europe. Near at hand, and depending upon local coal supplies, are the secondary metal industries of St. Étienne and Le Creusot. This region rose rapidly in importance during the World War while the northern section was occupied by the Germans. Numerous other smaller centers exist chiefly near such ports as Bordeaux, Nantes, Marseille and Rouen.

**The Textile Industries.**—France has long been an important producer of fine textiles. The manufacture of silks has been one of the most characteristic industries, centering in the Rhône Valley where local supplies of raw silk were available. Today France is the leading nation of Europe in both the production and the export of silk fabrics. The use of rayon is expanding rapidly, and much mixed rayon and silk fabric is turned out. France ranks only fourth among the European states in the production of rayon, but occupies first place in its consumption. Fine cotton and high-grade woollens are also characteristic products in the north and east. On the basis of the consumption of raw wool, France leads all other European nations. Its cotton manufactur-

ing is increasing, but it ranks slightly below Germany and considerably below the United Kingdom in this activity. The raw materials for both of these industries are largely imported. Textiles constitute the most important group of French exports. Cotton and silk fabrics rank first and second among the individual exports of the nation.

**Iron and Steel.**—In the production of iron and steel, and finished iron and steel products, France has advanced rapidly since the World War. Between 1913 and 1930, pig iron production increased 11 per cent, steel production 35 per cent, and finished products 83 per cent. In 1931 the country ranked first among the European states in the production of pig iron, second in the production of steel, and a rather poor third in the manufacture of machinery. These activities are aided by the ore resources of Lorraine, but are handicapped by inadequate supplies of coal and skilled labor. Much iron and steel are now exported, but finished metal goods are imported. The iron and steel industry is located principally in Lorraine and the north, while the manufacture of machinery is widely scattered, Paris, Lyon, Strasbourg and Lille being the chief centers. Automobiles are one of the principle types of finished products produced, and France is rapidly assuming the lead among the European states in their production and export.

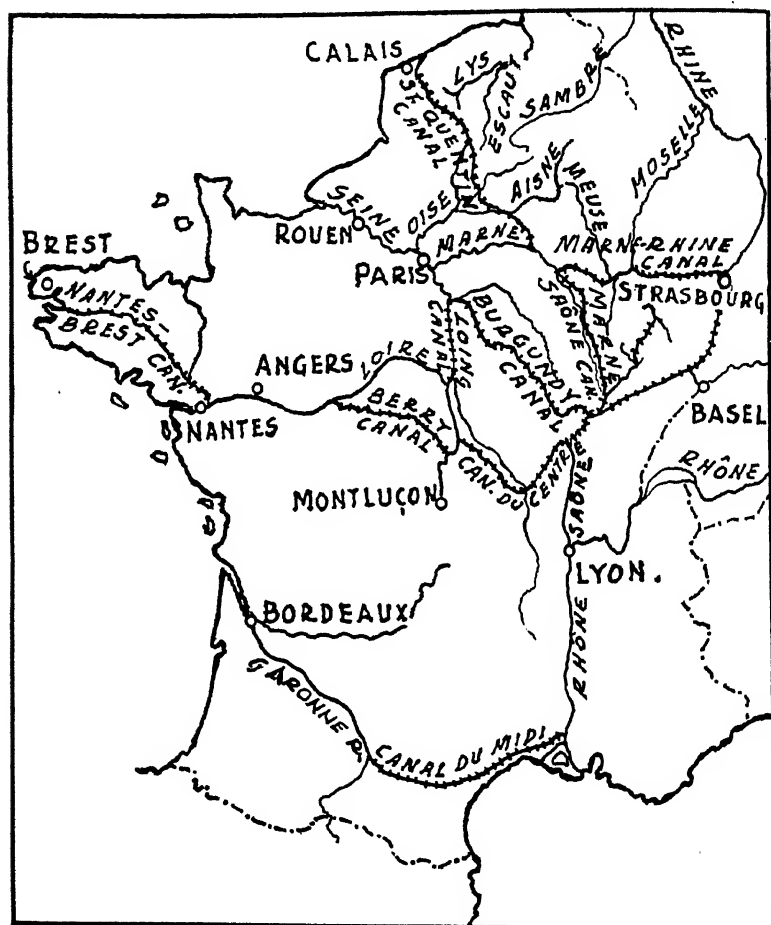
TABLE 76  
PRODUCTION AND EXPORT OF AUTOMOBILES, 1929 AND 1930  
(U. S. Department of Commerce)

Country	Production		Export	
	1929	1930	1929	1930
England.....	233,925	235,676	42,321	29,819
France.....	248,000	221,950	49,025	31,158
Germany.....	80,500	70,044	7,784	5,665
Italy.....	54,100	36,532	23,689	20,635
Austria.....	9,110	3,200	2,858	1,474
Belgium.....	7,000	4,700	2,723	933
Switzerland.....	3,000	1,000	173	160

**Artistic Products.**—The production of high-grade artistic products is still the most characteristic phase of French industry. This activity is carried on in small shops, and is based on the skill and artistic ability of French labor. Tapestry, laces, cut glass, porcelain, gowns and perfumes are but a few of the articles of this type. Together they constitute an important portion of French exports.

## TRANSPORTATION FACILITIES

France is fortunate in being well served by transportation facilities. It has 39,725 miles of railways. This is 9.5 miles per 10,000 inhabi-



The principal navigable waterways of France. (After Blanchard and Todd, modified.)

tants, or more than any other large nation of Europe. It also has 9470 miles of inland waterways, which are extensively used, although they carry only 13 per cent as much freight as the railways. The French merchant marine ranks third in Europe and fifth in the world, and has increased steadily during recent years. A well organized system of air lines covers most portions of the country, and provides rapid trans-

portation for passengers and mail. These excellent facilities favor trade and communication, and have played their part in French commercial and cultural greatness.

### INTERNATIONAL COMMERCE

France is well situated for international trade both by land and by sea. In spite of this advantage, foreign commerce is less well developed than in many neighboring countries. This is due to numerous causes, among the most important of which are a scarcity of good harbors, the comparatively late development of manufacturing, and the unusually well-balanced economic set-up of the country itself. This makes it less dependent upon outside areas than is the case with most western European nations. While in total foreign trade France is considerably exceeded by both the United Kingdom and Germany, in per capita trade it is approximately equal to Germany.

TABLE 77  
SOURCES OF FRENCH IMPORTS  
(percentage of total)  
(U. S. Department of Commerce)

Country	Percentage of Total Imports		
	1913	1926-1930	1931
United States.....	10.7	12.3	9.0
Germany.....	12.7	10.4	14.5
United Kingdom.....	13.2	10.4	8.8
Belgium.....	6.6	7.6	8.6
Algeria.....	3.9	5.2	8.1
Argentina.....	4.4	3.9	3.4
All others.....	48.5	50.2	47.6
Total.....	100.0	100.0	100.0

Today the foreign trade of France exhibits the characteristics of an industrialized nation. Industrial raw materials and foods make up 85 per cent of all imports, while manufactured goods form 62 per cent of all exports. Raw wool, raw cotton, coal, wheat and wine are the leading import items, and silk and cotton fabrics, iron and steel, and wool textiles are the most important exports. Recently there has been an increasingly large import balance which is normally counterbalanced by tourist expenditures and the return from foreign investments.



TABLE 78  
 DESTINATION OF FRENCH EXPORTS  
 (percentage of total)  
 (U. S. Department of Commerce)

Country	Percentage of Total Exports		
	1913	1926-1930	1931
United Kingdom.....	20.9	16.4	16.6
Belgium.....	16.1	14.8	11.8
Germany.....	12.6	9.9	9.0
Algeria.....	8.0	7.8	13.1
Switzerland.....	5.9	6.5	7.6
United States.....	6.1	6.0	5.1
All others.....	30.4	38.6	36.8
Total.....	100.0	100.0	100.0

### THE FRENCH COLONIES

France possesses a colonial empire which, from the point of view of size and widespread distribution, ranks second only to that of Great Britain. It comprises an area of 3,958,626 square miles, and contains a population of 55,631,184. Thus the area is nearly eighteen times as great as that of France itself, but the population is only 34 per cent greater. While France has possessions on nearly every continent, some nine-tenths of the total colonial area lies in Africa. Tunisie (Tunisia), Algeria and Maroc (Morocco) are the most valuable of these possessions, and the most closely linked to France. Much of the African territory unfortunately consists either of deserts or of equatorial areas, and at present is of little value. The only other extensive holdings are Madagascar and French Indo-China.

The present empire is largely the result of efforts made during the nineteenth century. The factors which seem to have led to the formation of the empire were the desire to enhance national prestige, the need for greater man power, and the desire for increased trade and supplies of raw materials. France has had no need for an outlet for a surplus population. This is perhaps fortunate, as only a small proportion of the colonial territory is suitable for white habitation. The colonies have, however, contributed man power and raw materials in important amounts, although most of them have not proven profitable investments from an economic point of view.

## BIBLIOGRAPHY

- Blanchard, R., *Geography of France*, Rand McNally & Co., Chicago, 1919.
- Blanchard, W. O., "The Lands—Reclaimed Waste Lands of France," *Economic Geography*, 1926, vol. 2, pp. 249-255.
- Brooks, A. H., and LaCroix, M. F., "The Iron and Associated Industries of Lorraine, the Sarre District, Luxembourg and Belgium," *Bulletin* 703, U. S. Geological Survey, Washington, 1920.
- Buchan, John (ed.), *France*, Nations of Today Series, Houghton Mifflin Company, New York, 1923.
- Chamberlane, E. T., "French and German Waterways," *Trade Information Bulletin No. 597*, U. S. Department of Commerce, Washington, 1929.
- Gallois, L., "Alsace-Lorraine and Europe," *Geographical Review*, 1918, vol. 6, pp. 89-115.
- Gooch, R. K., *In the Provinces: Regionalism in France*, D. Appleton-Century Co., Inc., New York, 1931.
- Greer, J. H., *The Ruhr-Lorraine Industrial Problem*, The Macmillan Company, New York, 1925.
- Johnson, D. W., *Topography and Strategy of the War*, Henry Holt & Co., Inc., New York, 1917.
- Jones, C. L., "The French Iron and Steel Industry," *Trade Information Bulletin No. 367*, U. S. Department of Commerce, Washington, 1925.
- Levainville, J., *L'Industrie du Fer en France*, Librairie Armand Colin, Paris, 1922.
- Michael, L. G., "Agricultural Survey of Europe—France," *Technical Bulletin No. 37*, U. S. Department of Agriculture, Washington, 1928.
- Musset, R., "The Geographical Characteristics of Western France," *Geographical Review*, 1922, vol. 12, pp. 84-99.
- Ogburn, W. F., and Jaffe, W., *The Economic Development of Post-War France*, Columbia University Press, New York, 1929.
- Ormsby, H., *France, a Regional and Economic Geography*, E. P. Dutton & Co., Inc., New York, 1932.
- Rice, G. S., and Davis, J. A., "Potash Mining in Germany and France," *Trade Information Bulletin No. 274*, U. S. Department of Commerce, Washington, 1927.
- Sömme, A., *La Lorraine Métallurgique*, Editions Berger-Leorault, Paris, 1930.
- Taylor, E. C., "French Chemical Industry and Trade in 1930," *Trade Information Bulletin No. 781*, U. S. Department of Commerce, Washington, 1931.

## CHAPTER XIII

### BELGIUM (ROYAUME DE BELGIQUE)

THAT a tiny section of the continent, which is slightly smaller than the State of Maryland, should be known both as "The Battleground of Europe" and "The Workshop of Europe" indicates its tremendous historical and economic importance. Through its fertile valleys the armies of its powerful neighbors have marched and countermarched, and have frequently laid waste its prosperous cities. In spite of these numerous interruptions, the able and energetic Belgians have built an industrial establishment which compares favorably with those possessed by most of the great nations of the world. Today a vast stream of finished products flows from its factories to every portion of the earth, while into its ports come foods and raw materials from every continent. Not satisfied with their accomplishments at home, its sons have gone overseas and have aided in building great industries in other lands.

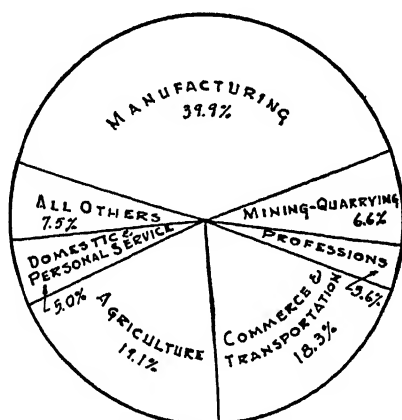
#### HISTORICAL BACKGROUND

Due to its strategic location, Belgium has had a most varied history. The Romans controlled it for some 500 years. In the ninth century it was split up into various duchies and counties. Eventually it was conquered by Spain and became a portion of the "Spanish Netherlands." It then passed under the control of Austria and was later incorporated in revolutionary France. Following the fall of Napoleon it merged with the Dutch provinces to form "The Kingdom of the Netherlands." National independence was not achieved until 1831, when it separated from the Netherlands and was recognized as an independent, neutral state. Its experience during the World War shows that, in spite of its neutrality, its position is not secure if its powerful neighbors resort to war.

#### POPULATION

The Belgians are mixed as regards both race and culture. At the time of the Roman invasion this region was occupied by the Belgæ. a

Celtic tribe. These peoples were largely displaced by later Teutonic invasions from the north. Today the country is inhabited by two distinct groups. In the south and southeast the Walloons occupy the Ardennes and the Sambre-Meuse Valley. These are short, dark, round-headed representatives of the central European race, and they speak French. The Belgian plain is settled by the tall, fair, long-headed Flemings who are representatives of the northern European race. They are closely related in speech and culture to the Germans and Dutch. The Walloons occupy the mineral regions and are the industrial leaders of the country. The Flemings are chiefly engaged in agriculture and commerce, although some of them have long been skilled in the



Occupations of the gainfully employed population of Belgium. Percentages of total employed. (U. S. Department of Commerce.)

textile industries. Both groups differ from the Dutch and Germans in that they are Roman Catholic in religion. Today the Walloons dominate the economic and political life of the nation, and French is the official language. Occasionally there arises some friction between the groups, but, considering the differences in race and language, the degree of unity is remarkable.

#### SIZE AND SITUATION

**Size.**—Belgium has an area of 11,754 square miles and is thus the smallest of the nations of Europe. Into this tiny land are crowded slightly more than 8,000,000 people, giving it a density of 692 per square mile. No other independent state is so densely populated, although England, Saxony and similar portions of other larger states exceed it in this respect.

**Situation.**—The position of Belgium is such as to make it a transition area both politically and geographically. Its boundaries are not well marked either physically or ethnically. The large rivers of the country both rise and empty beyond its frontiers, and it is crossed by the great east and west trade routes which follow the European plain. Adjoining it are such active countries as France and Germany, while across the narrow sea lies the mouth of the Thames and England. These states provide Belgium with important markets and sources of raw materials, thus materially stimulating its economic life. They have also frequently dominated the nation politically and have contributed many cultural elements.

The frontiers of the nation well illustrate its transitional character. The southern frontier lacks any physical barriers and is the historical result of the struggle between France and Spain. As the result of numerous wars, France extended its borders toward the north, incorporating Lille, Valenciennes and other portions of the Spanish Netherlands. Toward the east the frontiers are again the result of historical struggles, and in this direction Belgium made small gains following the World War. It secured from Germany territories around Eupen, Malmédy and Moresnet which have a combined area of 382 square miles and a population of some 64,000. These were taken with the avowed purpose of strengthening the eastern frontiers from a military point of view. The northern boundary follows a line of sparse population through the Campine and Limberg regions, and is the result of the struggle between the Dutch and the Belgians in 1830. The Dutch were successful in confining the Belgians to a strip of coast line which is of little value, and in retaining possession of both banks of the Scheldt. This has been a serious handicap, as the proper maintenance of navigation on that river is essential to the success of the port of Anvers.

Without natural frontiers and located in the midst of the most powerful nations of the continent, Belgium has been a battle ground since the dawn of European history. Waterloo, Ramillies, Oudenarde and Jemappes were the scenes of some of the most notable struggles of the past, and the World War added many new battle fields. Lying largely in the European plain, Belgium provides the least obstructed pathway for armies passing between France and Germany. Its proximity to England likewise makes it a natural center of activity in case of warfare between that country and either of the major continental powers. Since neutrality agreements are likely to be disregarded by any great state which feels its safety seriously menaced, the future peace of Belgium will depend upon peace between its powerful neighbors.

Politically the location of Belgium has been a handicap, but economically it has been a decided advantage. Near at hand are the greatest markets of the continent and important sources of such essential raw materials as iron and coal. The nation is closely tied to these neighboring regions by a very complete network of railways, rivers and canals. Excellent contact with the sea, by way of the Scheldt, has made Anvers one of the greatest ports of Europe. These contacts have stimulated Belgian industry, fostered commerce, and played an important part in the economic development of the country.

### GEOGRAPHICAL REGIONS

#### THE ARDENNES PLATEAU

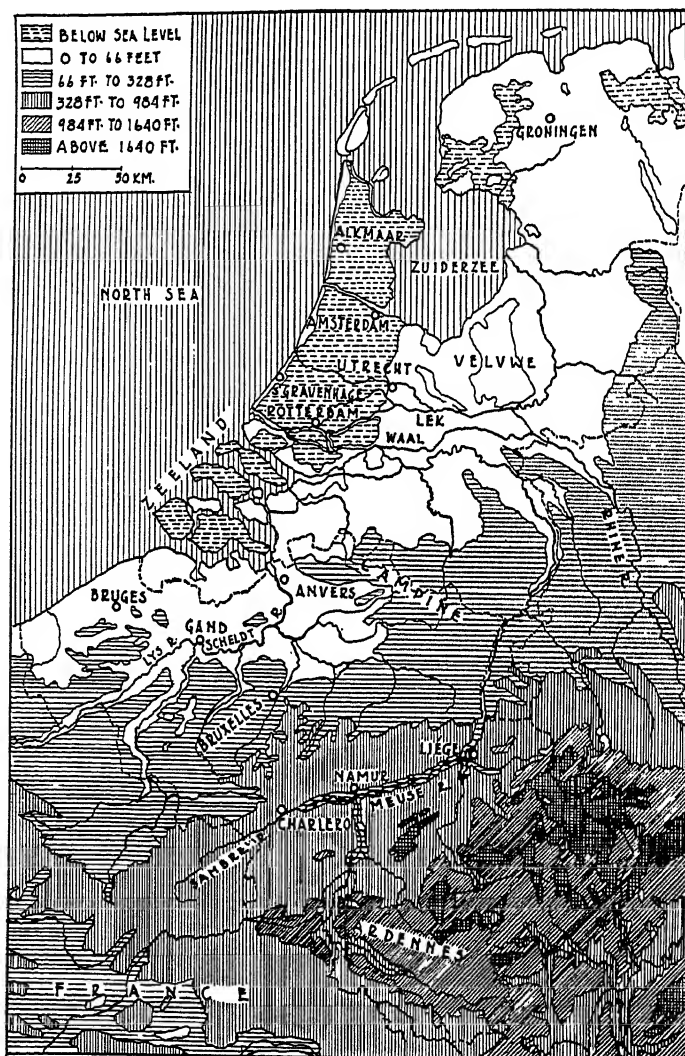
The southeastern portion of Belgium is occupied by a corner of the ancient massif of the Ardennes. This consists of a plateau deeply dissected by streams and varying in elevation from 500 to 2000 feet. For the most part it is a region of steep wooded slopes and narrow winding valleys. Towns are scattered along the valley floors, especially where transportation routes converge. It contains no large cities, and population is sparse due to limited economic possibilities. Small amounts of level land, infertile soil and the cooler climate of the upper elevations cause cultivation to be of slight importance. Occasional un-forested slopes and the cleared portions of the valleys provide pastures on which the Belgian peasants graze considerable numbers of sheep. Lumbering is locally important, and provides seasonal employment for a portion of the agricultural population. To these activities may be added a small tourist industry, based on the picturesque character of sections of the plateau. Altogether, this region has contributed comparatively little to Belgian economic or cultural life.

#### THE SAMBRE-MEUSE VALLEY

The Sambre-Meuse Valley divides the old hard rocks of the Ardennes from the newer tertiary deposits of the plain. In addition, it forms the dividing line between the two dominant peoples of Belgium. Within the valley and to the south and east reside the French-speaking Walloons, while the Flemings are to be found to the north and northwest.

This valley constitutes the industrial heart of Belgium. Its coal fields, its former deposits of lead and zinc, and its proximity to the

Lorraine iron ore have favored the rise of metallurgical industries. It is a land of smoking chimneys, great piles of waste and closely packed industrial cities. It is the region above all others which justifies Belgium's claim to the proud title of "The Workshop of Europe."



The relief of Belgium and the Netherlands. (After Demangeon, modified.)

The valley contains the most used coal beds of the nation. There are three centers of production. The "Meuse field" stretches from Namur to Liège, the "Sambre field" occupies the district around Charleroi, and the "Hainault field" has Mons as its center. Such other

minerals as lead, iron and zinc were formerly found in considerable quantities. These deposits have mostly been exhausted, although some zinc is still mined near Vieviere. However, a large smelting industry was developed in this region and, although the ores are nearly exhausted, it remains the leading zinc-smelting center of Europe.

The abundance of minerals encouraged an early growth of manufacturing. The metallurgical industries are of major importance. Charleroi, Namur, Liège and neighboring cities are sufficiently important in iron and steel production to cause Belgium to occupy fifth place among the European powers in these activities. Around these same centers much of the steel is turned into finished products which are distributed widely throughout the world. The manufacture of glass is another important industry, and is based in part on local fuels and glass sands. Recently there has also been a rapid growth of a chemical industry which makes use of the by-products from the manufacture of coke and iron and steel. All of these industries depend upon the supply of cheap but skilled labor which is so abundant in the cities and villages of the valleys.

These valleys have also played an important part in European history. They provide an easy passageway from Germany into northern France. From Köln (Cologne) a natural route leads around the highlands, through Aachen to Liège. From here France may be reached by either of two routes. One passes through Namur and along the Sambre Valley, entering France at the fortified city of Maubeuge. The other follows the Meuse Valley from Namur past the famous battle field of Sedan. Both of these are important trade routes, and both have been followed by invading armies since the dawn of European history.

#### THE BELGIAN PLAIN

Separated from the Meuse Valley by a chalk ridge and extending to the sea stretches the flat or gently rolling expanse of the Belgian plain. This forms the heart of agricultural Belgium, a land of clean peasant villages and tiny but intensively cultivated fields. Here also are Bruxelles (Brussels) and Anvers, the nation's leading cities and its greatest commercial centers. This plain is the land of the Flemish peoples, except for French-speaking Bruxelles. It is the Flemish peasants who laboriously till its fertile soils. It has been the Flemish sailors who have aided in making Anvers one of the greatest ports of Europe. From here the Flemish weavers spread the art of weaving fine textiles throughout Europe. It is Flemish art and architecture which gives such a delightful



and distinctive flavor to Bruges, Gand, Anvers and the other cities of the plain.

Although the Belgian plain is small, differences in soil and relations to the waterways have led to numerous variations in human



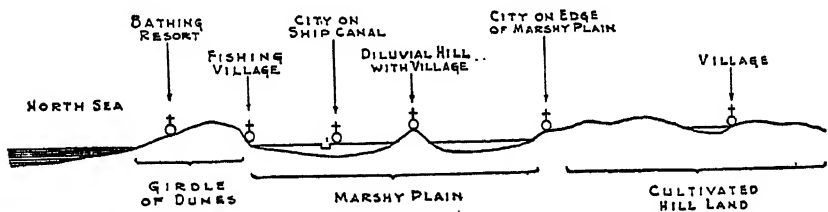
Harvesting potatoes, near Gand (Ghent), Belgium. (Keystone.)

development. The coast is low and sandy, with no good natural harbors. Ostend is the principal port, but it is small and is chiefly important as the terminus of the Channel steamers from Britain. In mediæval times

Bruges was a port of first rank, but with the silting up of its harbor and the increase in the size of vessels it lost its importance. Recently it has been connected with the sea by the Zeebrugge Ship Canal, and is again capable of receiving ocean-going ships. Its natural hinterland, however, is much smaller and less productive than that of its great rival, Anvers, and it seems doubtful whether it will again become a port of major importance. It is, nevertheless, a most picturesque city, and attracts many tourists. Lace making is an important local industry, and textiles and some machinery are manufactured.

Although it lacks good harbors, the Belgian coast is excellent for bathing and is dotted with a number of small resorts. These are extensively patronized by the peoples of the interior cities and by the English.

Sand dunes line the coast, and where necessary these are connected by artificial dikes, for without such protection many of the low areas would be flooded at every high tide. The sandy soils of the coastal



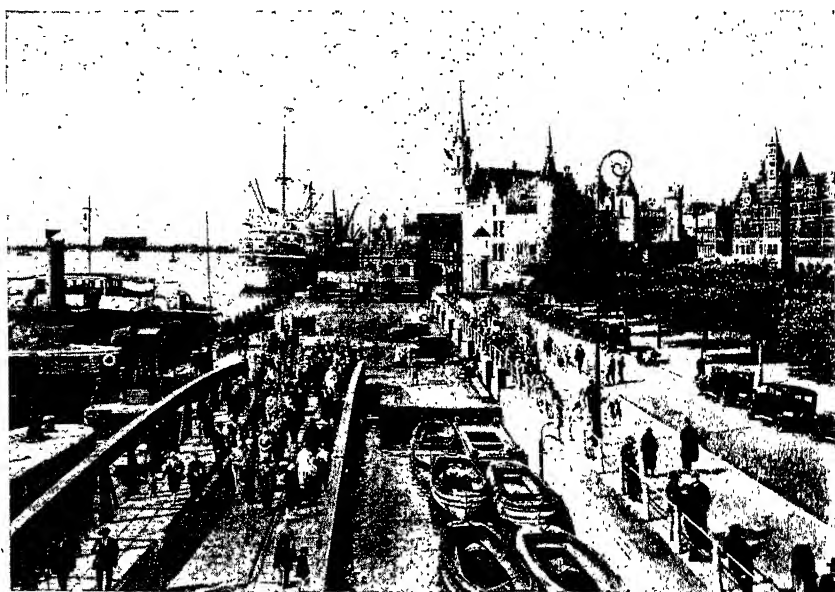
Cross section of the Belgian coastal region. (After S. Passarge.)

region are infertile and unsuitable for most crops. However, much of this land has been reclaimed by planting grass and is now used for the grazing of cattle and horses. Heavily fertilized orchards and market gardens are found in some sections, but these occupy only a small proportion of the total area. These activities do not provide employment for any large number of workers, and the region is consequently not densely populated.

The fertile central portion of the plain is the most productive agricultural section of the country. Its dense population lives in innumerable little villages surrounded by their intensively cultivated fields. Here the plain consists of clay covered with a thin layer of sand. Plowing mixes these and produces a loamy soil which is very fertile. The thrifty Belgian peasants make use of every available foot of this land and carry on a laborious but very intensive system of hand agriculture. A variety of crops are raised, and so intensively are they cultivated that the yields per acre are among the highest to be found throughout Europe or the world.

**Bruxelles.**—Bruxelles, the capital and largest city of Belgium, is situated in the midst of this plain. Together with its suburbs, it has a population of some 825,000. Its central location and excellent railway connections with all portions of Belgium and with neighboring countries have made it an important commercial center. It is especially noted, however, as an industrial center, and its citizens are busily engaged in turning out a wide variety of manufactured goods, among the more important of which are high-grade textiles and artistic wares.

**Anvers.**—As the plain is drained by the Scheldt, trade tends to gravitate toward Anvers. This has been an important port since the



The port of Anvers. (Courtesy of the Commercial Museum, Philadelphia, Pa.)

days of the Hanseatic League, and is at present one of the greatest ports of Europe. It has ample docking space and water sufficient to float the largest ships, and the most up-to-date equipment is available for loading, unloading and warehousing goods. Excellent rail facilities connect it with all sections of Belgium, northern France, western Germany and central Europe, and consequently it handles much of the export and import traffic which moves by rail to and from these areas. Many industries have grown up, based in part on imported raw materials. Among the more important of these are distilling, flour milling, sugar refining, and tanning. In addition to its economic importance, Anvers is a noted center of Flemish art, and is of interest due to its

many old and historic buildings. However, the new overshadows the old; and today it is a modern progressive city boasting, together with its suburbs, a population of some 414,000.

Between Anvers and the frontier of The Netherlands lies the portion of the Belgian plain known as the Campine. It is a barren area of thick sandy soils and dunes, and is relatively sparsely populated. Large portions of the land are uncultivated and covered with scrub growth. Recently coal of excellent coking quality has been discovered in this region, and mining is rapidly becoming more important.

### AGRICULTURE

The agriculture of Belgium is characterized by intensive cultivation and scientific fertilization. As a consequence, this is the leading country in the production per acre of numerous crops. In spite of these high yields, the nation is unable to supply the food requirements of its people, and foods constitute slightly over 20 per cent of the total imports.

The industrious Belgian farmers use every available acre of land, but, as has been seen, such regions as the Ardennes, the Campine and the sandy coastal strip contain considerable areas which are unsuitable for cultivation. Such lands are frequently covered with grass, and some 20 per cent of the entire area of the nation is in permanent

TABLE 79  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS OF BELGIUM  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Production (thousands of units— bushels, except as indicated)	
	1909-1913	1926-1930	1909-1913	1926-1930
Wheat.....	404	387	15,199	14,705
Oats.....	668	682	43,964	46,591
Rye.....	672	569	23,644	20,826
Barley.....	88	78	4,446	3,752
Potatoes.....	404	409	110,830	121,521
Sugar beets.....	146	154	1,627 <sup>a</sup>	1,786 <sup>a</sup>
Fodder beets.....	182 <sup>b</sup>	197	3,459 <sup>ab</sup>	4,929 <sup>a</sup>
Flax.....	49 <sup>b</sup>	58	51,888 <sup>bc</sup>	52,629 <sup>c</sup>

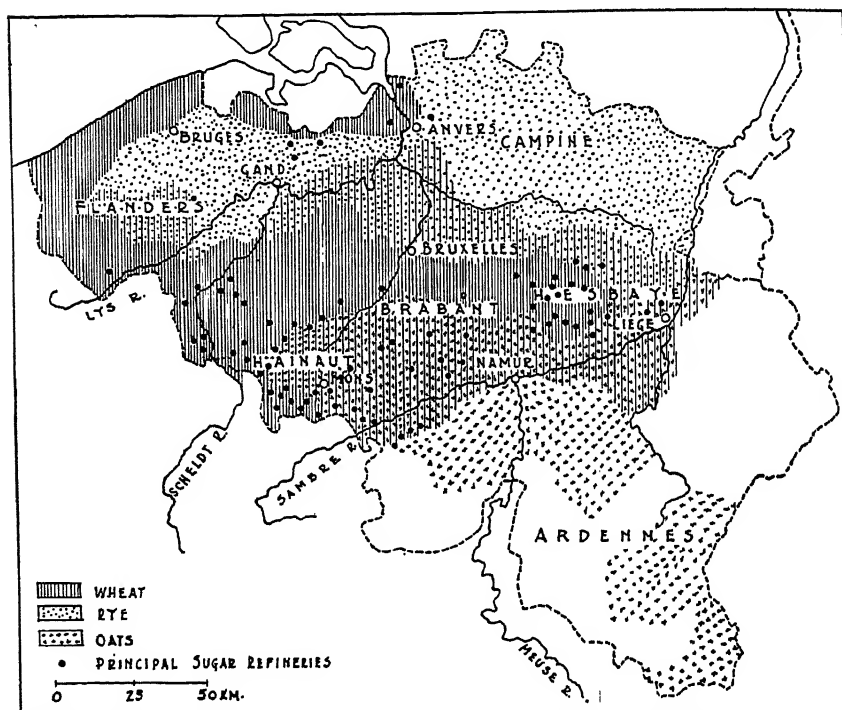
<sup>a</sup> Unit, metric ton.

<sup>b</sup> 1911 to 1913 average.

<sup>c</sup> Unit, pound of fiber.

meadow and pasture. The richest lands lie in the central portion of the plain and in the valley of the Meuse. These regions contain the major part of the 43 per cent of the country which is under cultivation and the 2 per cent which is in orchards and vineyards.

The limited areas of available land and the dense population are largely responsible for the fact that the Belgian farms average only between three and four acres in extent. These tiny holdings surround



The distribution of the principal cereals in Belgium. (After Demangeon, modified.)

attractive and clean agricultural villages which house the farming population. Among the Walloons the majority of the farmers own their own land, but among the Flemings tenancy is very common. The small size of the farms and the abundance of cheap labor cause hand cultivation to predominate, and the hoe is the most characteristic implement used. It is a laborious method of making a living, and it is little wonder that there has been a steady movement from the agricultural districts to the cities.

**Crops.**—Diversification characterizes the central portion of the plain. Oats, rye and wheat are the leading cereals in the order named, while potatoes, sugar beets and fodder beets are the most important

root crops. The nation has long been noted for the high quality of its flax, which is raised chiefly in Flanders along the river Lys, whose waters are particularly suited to retting the flax in preparation for manufacture. Around the historical city of Gand (Ghent) and in the other sandy portions of the plain horticultural activities are important. Here many people are engaged in raising plants and bulbs for export. A variety of fruits are also raised in the valley of the Meuse and on the lower slopes of the Ardennes. In general, the agriculture of Belgium is characterized by the raising of those crops which have a high yield per acre and which require a considerable amount of hand labor.

TABLE 80  
YIELD PER ACRE OF REPRESENTATIVE CROPS, AVERAGE 1927-1930  
(yield in bushels except as indicated)  
(U. S. Department of Commerce)

Crop	Belgium	The Netherlands	Denmark	United States
Wheat.....	37.0	43.9	42.3	14.5
Oats.....	66.4	60.7	70.0	30.4
Rye.....	38.8	34.1	25.5	12.8
Barley.....	52.1	56.4	53.5	24.1
Potatoes.....	287.0	297.5	217.8	112.7
Sugar beets.....	11.8 <sup>a</sup>	13.8 <sup>a</sup>	11.7 <sup>a</sup>	11.1 <sup>a</sup>

<sup>a</sup> Unit, metric ton.

**Livestock.**—The raising of livestock is especially important in the sandy portions of the plain and in the more rugged districts of the southeast where the land is least suitable for cultivation. The grass lands on the reclaimed portions of the sandy plain support large dairy herds and are also the home of the heavy Flemish draft horse. In the central portion of the plain and in the Sambre-Meuse Valley some cattle, horses and swine are raised as part of the system of diversification. The slopes of the Ardennes provide pasturage for considerable numbers of sheep and cattle. The demands of the large industrial population for dairy products and meat encourage the growth of the animal industries, but these are less well developed than in Denmark or The Netherlands.

## NATURAL RESOURCES

Belgium was formerly richly endowed with such minerals as lead, zinc, iron and coal, but today coal alone is mined in quantities. The inclusion of Luxembourg within the Belgian Customs Union has com-

pensated for part of this loss by placing at the nation's disposal iron ore deposits which yield some 7,000,000 tons annually. Nevertheless, in order to meet the demand of the iron and steel industry, it is necessary to import approximately twice this amount each year. Fortunately, the great Lorraine deposits are near at hand, and transportation costs are low.

Metals have been of major importance in the past, but at present coal is the greatest mineral resource of Belgium. Unfortunately, its deposits leave much to be desired, for the coal is not of the best coking quality and the veins are deep, many of the mines being from 2000 to 3000 feet in depth. The coal measures are also thin and frequently broken. Consequently, mining costs are high and production is carried on under great handicaps.

Recently Belgium has been producing approximately 27,000,000 tons of coal annually, which is 26 per cent more than in 1913. In spite of this increase, it is necessary to import some 7,000,000 tons each year to meet the combined needs of Belgium and Luxembourg. The majority of the imports come from Germany.

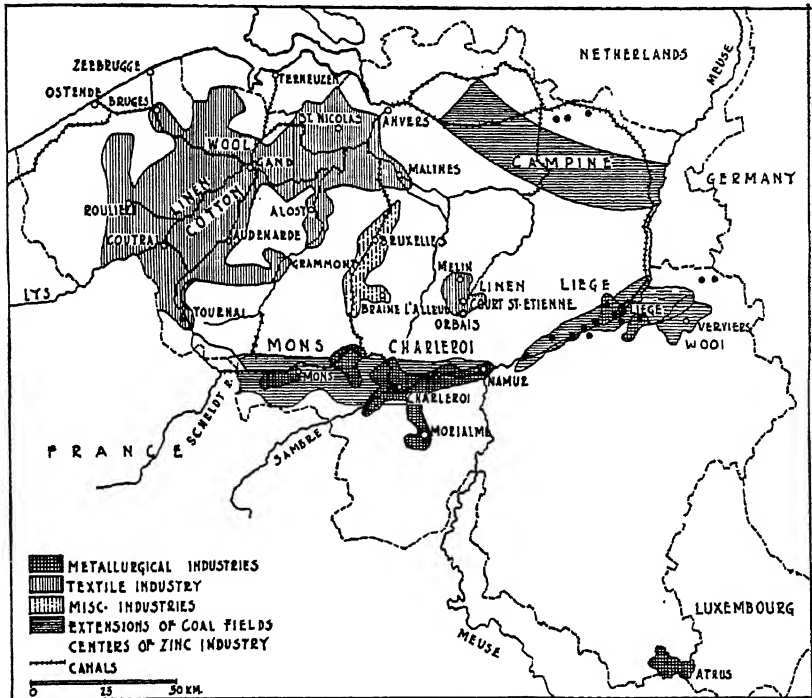
Until recently all the coal mined came from the Sambre-Meuse Valley, but at present a new mining center is being opened in the Campine. This region has reserves nearly three times as great as those of the south, and much of the coal is of good coking quality. Mining operations are simplified by the fact that the coal is near the surface. Proximity to Anvers creates a large local demand for this coal, and also makes it valuable from the point of view of exports. As exploitation increases in this area, it may well lead to the development of a new industrial center which will change the economic picture of the country.

### MANUFACTURING

Belgium has many advantages from the point of view of manufacturing. Among these are its central location, its excellent transportation facilities, its coal supplies, and its proximity to iron ore; but perhaps its greatest advantage is its abundant supply of skilled but cheap labor. These advantages have enabled it to become one of the most highly industrialized nations of the world.

The manufacture of iron and steel and of iron and steel products constitutes the most important industrial activity in the country. Today Belgium ranks fifth in European iron and steel production, being only slightly behind Russia in this activity. The industry has grown rapidly since the World War, as is evidenced by the fact that the production

of pig iron increased 65 per cent, and that of steel 67 per cent, between 1913 and 1930. This increase has been due to enlarged plants and to increased efficiency through concentration and integration. Liège is the great center of the industry, although plants are also located at Namur, Charleroi and other cities throughout the Sambre-Meuse Valley. Liège ranks with Essen and le Creusot as a metallurgical center, and is especially noted for its firearms and machinery. Some 75 per



The distribution of industries in Belgium. (After Demangeon.)

cent of the iron and steel output of the country is exported, chiefly in the form of finished products.

**Textile Industries.**—During the Middle Ages Flanders was the textile center of Europe. The skill of the Flemish weavers gave them a reputation for excellence unrivaled by that of any other people. Gand (Ghent), Bruges, Ypres and numerous other Flemish cities attained large size and amassed great wealth through the production of textiles. The Flemish carried their skill overseas, and were largely responsible for starting textile industries in England. Today these people still retain their skill, and this is one factor responsible for the importance of these industries. Originally local raw materials were used, but to-



TABLE 81  
INDUSTRIAL PRODUCTION OF BELGIUM  
(U. S. Department of Commerce)

Product	Average		
	1913	1926-1929	1931
Coal, 1000 metric tons.....	22,842	26,842	27,036
Coke, 1000 metric tons.....	3,523	5,675	4,932
Pig iron, 1000 metric tons.....	2,485	3,788	3,228
Crude steel, 1000 metric tons.....	2,467	3,786	3,126
Finished steel, 1000 metric tons.....	1,859	3,197	2,252
Crude zinc, 1000 metric tons.....	204	201	138
Window glass, 1000 square yards.....	49,883	66,287	37,000
Plate glass, 1000 square yards.....	2,924	4,489	2,042
Cotton yarn, 1000 pounds.....	100,089	144,531	117,505
Wool conditioned, 1000 pounds.....	60,798	83,408	62,963
Rayon, 1000 pounds.....	5,952 <sup>a</sup>	15,112	10,150

<sup>a</sup> 1914.

day almost all the textile fibers have to be imported. Even the linen is manufactured largely from Russian flax, most of the Belgium flax being sent to Great Britain. Belgium imports large amounts of unwashed wool, and exports washed wool as well as woollen fabrics. Cotton is brought in from the United States and Egypt through the port of Anvers. The rayon industry is of growing importance, and again much of the raw material has to be imported. Lace making has long been famous in Belgium and still continues, although machine-made lace is gradually replacing the hand product. The nation thus produces a variety of textile products. Some of these, such as linen, have a world reputation for their excellence. Many textile products are produced for export, and combined they make up approximately 15 per cent of the exports of the country.

A variety of other types of manufacturing add to the industrial importance of the nation. The manufacture of glass is one of the older and more important industries, and is located principally in the coal regions, with Liège as its center. Here fuel, sand and skilled labor create ideal conditions for its production. About 90 per cent of this glass is exported. The chemical industry is located in the same region, and is growing rapidly. It is sufficient to supply Belgium not only with all its artificial fertilizers and other needed chemicals, but with a considerable surplus for export. The limestone, shale and coal of the Sambre-Meuse district have led to an important development of the

cement industry, and large amounts are exported. The production of paper and aluminum and the cutting of diamonds are a few of the other industries which add to the industrial prosperity of the country.

### TRANSPORTATION FACILITIES

Belgium is as well equipped with transportation facilities as any nation in the world. It has 6067 miles of railways, or 516 miles per 1000 square miles of territory, which gives it a more dense railway net than any other nation. Bruxelles and Anvers are the greatest railway centers, although Liège is a close competitor.

The country also has 1040 miles of navigable waterways, of which some 650 miles are canals. The levelness of most of the country, its two river systems, and its seacoast have encouraged the construction of facilities of this type. Not only are all sections of the plain well provided with waterways, but the country is linked to its neighbors by canals or rivers.

### COMMERCE

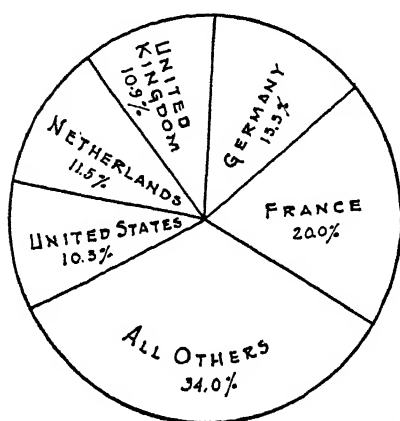
A central location, excellent transportation facilities, and a high degree of industrialization have encouraged Belgian foreign trade. A recently concluded customs agreement with The Netherlands has been an additional favorable factor. As a consequence, only Denmark, The Netherlands and Switzerland exceed Belgium in per capita foreign trade, while in total foreign trade the nation ranks fifth among the European powers.

The highly industrialized character of the country is reflected in a foreign trade which consists chiefly in the importation of foods and industrial raw materials and the exportation of manufactured goods. In 1930 food and raw materials made up 69 per cent of all imports, with wheat, raw wool, coal and coke, textiles and machinery the leading individual items. During the same year manufactured goods formed 61 per cent of all exports, with iron and steel, textiles, precious stones, coal and coke and machinery the most valuable individual items.

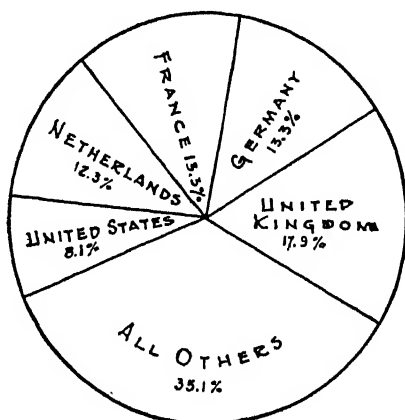
### THE BELGIAN CONGO

The Belgian Congo is the principal colonial possession of the country. This territory was incorporated into the Congo Independent State in 1885, and was under the personal control of Leopold II, King

of the Belgians. It remained on this status until 1907, when flagrant exploitation and the existence of slavery led to its formal annexation by Belgium. The territory is huge, having an area of 920,849 square miles and a native population of some 10,000,000. It is a region of considerable economic possibilities, but its development is as yet in its early stages. It contains some large copper deposits, as well as considerable quantities of radium, gold, diamonds and other minerals. Coffee, rice, palm oil, rubber and other tropical products are also produced. Today the colony is approximately self-supporting, but in the



Sources of Belgian imports; average, 1926-1930. Percentages of total imports. (U. S. Department of Commerce.)



Destinations of Belgian exports; average, 1926-1930. Percentages of total exports. (U. S. Department of Commerce.)

future it should be a decided asset to Belgium as a source of raw materials and as a market.

### LUXEMBOURG

The Grand Duchy of Luxembourg grew up around the town of Lützelburg, whose rock fortifications were among the strongest in Europe during the Middle Ages. It had a varied political career until it became a member of the German Customs Union following the formation of the German Empire. After the World War its fate was uncertain for a time, but in 1922 it became a member of the Belgian Customs Union, and economically it is dominated by that country at present.

It is a small territory of approximately 1000 square miles, and contains a population of 286,000. The inhabitants are partially of French

and partially of Germanic stock. They speak a Low German mixed with French, although French is the language of business.

The northern half of the duchy is high and rugged, being a part of the Ardennes; the southern half lies in the Lorraine plateau and is very rich in iron, the ore deposits being a continuation of those in French Lorraine. Numerous mines are located around Esch, and the entire section produced on an average of 7,254,000 tons of ore annually for the five-year period 1925-1929. Some of the ore goes to the Belgian furnaces, but the majority is used locally. The duchy had an annual average production of 2,666,000 tons of pig iron for the five-year period just considered, while steel production averaged 2,414,000 tons for the same period. The production of ore and pig iron is approximately the same as in 1913, but the production of steel is more than twice as great. Prior to the World War much of the pig iron was sent into Germany, and some went to Belgium, but since the war an increasingly large amount has been turned into steel and finished products within the area itself. The only other industry of any importance is the tanning of leather and the manufacture of gloves, and is located in the Alzette Valley.

Some 460 square miles are cultivated. The best agricultural land is in the valley of the Moselle, which contains valuable orchards and vineyards. The valley produces some 3,000,000 gallons of wine, considerable amounts of which are exported to Belgium and Germany. Apples, pears and plums are also raised in large amounts, the valley being especially famous for its plum brandy. Barley, oats, potatoes and sugar beets are the most important staple crops, and are raised on the plateau as well as on the more fertile soils of the valleys.

#### BIBLIOGRAPHY

- Demangeon, A., *Belgique—Pays-Bas, Luxembourg*, Géographie Universelle, tome 2, Librairie Armand Colin, Paris, 1929.
- Lefèvre, M. A., *L'Habitat Rural en Belgique*, Imprimerie H. Vaillant-Carmanne, Liège, 1926.
- Michotte, P. L., "L'Industrie Belge de Charbon," *Annales de Géographie*, 1929, tome 38, pp. 47-66.
- Omond, G. W. T., *The Kingdom of Belgium and the Grand Duchy of Luxembourg*, Nations of Today Series, Houghton Mifflin Company, New York, 1923.
- Parks, J. E., "Luxembourg: A Brief Economic Survey," *Trade Information Bulletin No. 559*, U. S. Department of Commerce, Washington, 1928.
- Visher, S. S., "Belgium and Holland," *Journal of Geography*, 1922, vol. 21, pp. 179-184.

## THE NETHERLANDS (NEDERLANDEN)

CONSIDERING its small size and limited resources, the Kingdom of the Netherlands has played a remarkably important part in European history. For a time it competed on an equal basis with Spain, France and Great Britain in both military and commercial activities. During this period it was an important colonizing power and established numerous overseas possessions. Many of these were later lost, but it managed to retain in the East Indies one of the most valuable groups of colonies in the world. The nation retained its commanding position until the Industrial Revolution made manufacturing the major factor in determining the economic importance of nations. The lack of adequate supplies of coal and iron handicapped the country in industrial activity and relegated it to a secondary position. While The Netherlands has declined in economic and military power, it still exercises an important influence in world affairs. The enviable reputation of its people for honesty and disinterested judgment has made it the home of such international organizations as the World Court, and has caused its citizens to hold leading positions in many international bodies.

The present economic activity of The Netherlands is well illustrated by the fact that it ranks among the leading European states in per capita wealth, and, together with the United Kingdom, it enjoys the leadership in per capita income. It also has a better-balanced economic development than such competitors as Belgium or Denmark. Manufacturing, agriculture and commerce are all of major importance, and the country holds an important position in each. No other people of Europe are more active economically than the Dutch.

## POPULATION

**The Type of Population.**—While the type of population varies in different sections of the country, and while there is some racial mixture, the northern European long-heads dominate. Only in those sections which were long isolated, such as the swamps of the central region and the coastal islands, are there any true representatives of the

central round-headed race. Some Spanish blood causes the Mediterranean type to appear occasionally. In spite of a high degree of racial uniformity, there are at least three different types of people to be found in the country. Along the coast and on the bordering islands are the tall, fair Frisians. These are a clean, independent group of seafarers. It was they who manned the fleet during the days of Dutch sea power, and who today form the majority of sailors in the merchant marine and fishing fleet. Their life has been upon the sea. In contrast to them is the grim Hollander of the *polders*. His life has been an unceasing struggle against the sea. The warfare seems to have brought out in him that determination and energy so characteristic of the Dutch people. In the poorer lands of the east is a third group of a still different type. These people are related to the Saxons and are shorter than the rest of the population. Here the standards of living are not as high as in the other sections, and the people seem less progressive.

In spite of these variations, there has developed a remarkable degree of national unity. This is due in part to the small size of the country and in part to various historical influences.

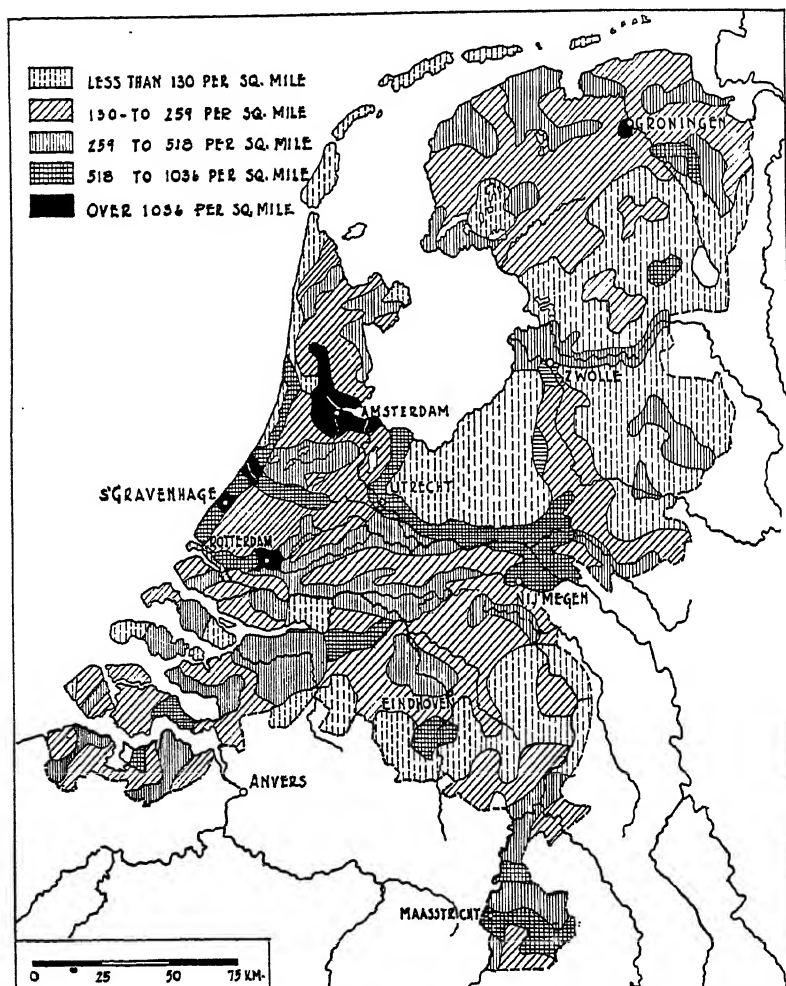
In general ability the population is high. The numerous cultural and economic achievements bear ample testimony to this fact. In addition, the educational standards are high. The country has an excellent school system, and less than one per cent of the population is illiterate. The small size and commercial activities of the nation make a knowledge of various languages essential, and almost every educated person can speak at least two or three.

**Distribution of Population.**—Population is most dense in the central district. Here are the largest cities and the most populous agricultural communities. The Frisian Islands and the eastern areas are less densely populated, but the expansion of industry and agriculture in the southeast has caused a rapid expansion of population in that area. Some one per cent of the population reside permanently on barges, and they constitute a difficult problem from the point of view of education.

The great majority of the population is urban. Only about one-fourth live in communities of less than 5000 inhabitants, and approximately the same percentage live in communities of over 100,000. The larger cities are growing rapidly, and are absorbing a larger and larger proportion of the population.

**Increase in Population.**—Within recent years The Netherlands has been confronted by a series of problems arising from a rapidly increasing population. From 1829 to 1930 population rose approximately 200 per cent. The increase has been especially rapid within

recent years, as is shown by the fact that from 1899 to 1931 it increased 57 per cent. Since 1928 the population has been increasing at the rate of approximately 100,000 per year. The result is that the country has a density of 600 per square mile, placing it in this respect second



The distribution of population in The Netherlands. (After Demangeon.)

to Belgium among the European nations, although it ranks behind England, Saxony and the most densely settled portions of other large states.

The rapid increase of population within recent years has been due primarily to a sharp decline in the death rate. The birth rate rose until about 1875, but has been declining steadily since that time. Even so,

the birth rate in 1930 was 23.1 per 1000 inhabitants, which is higher than in any other country in northwestern Europe. The death rate declined gradually until about 1875, but since that time the decline has been rapid. In 1930 it amounted to 9.1 per 1000 inhabitants, which is lower than that of any other country in Europe. Thus in 1930 the rate of increase in population, as represented by the difference between birth and death rates, was 14 per 1000, or more than in any other nation in the western part of the continent. As the rate of increase in The Netherlands is more than twice as great as that in Belgium, it is probable that the former country will surpass Belgium in the density of population in the not far distant future.

This rapid growth of population has made necessary economic readjustments to provide employment for the increasing numbers. It has been in part responsible for the expansion and intensification of agriculture, the extension of commercial activities and the rapid rise of manufacturing. If the increase continues, it will become more and more difficult to provide employment. The problems to which this condition gives rise are not easy to solve, and are receiving serious attention in The Netherlands at present.

**The Occupations of the Population.**—Many people in the United States have become so accustomed to considering The Netherlands as primarily agricultural and commercial that it comes as a distinct surprise to find that it is one of the most highly industrialized nations in Europe. The rapid rise of industry within recent years has materially

TABLE 8c  
OCCUPATIONS OF THE POPULATION OF THE NETHERLANDS<sup>1</sup>

Occupation	Number of Persons Employed		
	1899	1909	1920
Industry.....	650,574	796,790	1,028,155
Agriculture.....	570,278	618,066	622,514
Fishing and hunting.....	22,496	23,855	19,597
Commerce and transportation.....	322,288	416,620	533,295
All others.....	357,998	406,303	518,846
Total employed.....	1,923,634	2,261,634	2,722,407
Total population of The Netherlands.....	5,104,137	5,858,175	6,865,146

<sup>1</sup> Van Vuuren, L., "Onze Volkskracht en de Landbouw in het Bijzonder ten Aanzien van Zuid-Beveland," *De Zeeuwische Polder*, August 15, 1930.



changed the distribution of population as far as occupations are concerned. The numbers employed in agriculture have increased slightly since the beginning of the present century, while those engaged in commerce and manufacturing have increased rapidly. As a consequence, The Netherlands is today one of the most highly industrialized nations, with manufacturing employing nearly as many people as agriculture, commerce and transportation combined.

### SITUATION

The development of The Netherlands can be largely explained by the fact that it is a delta country. Its location on the deltas of the Rhine, the Meuse and the Scheldt aids in explaining the commercial importance of the country. It is a natural gateway between the river and the sea, and consequently an important transshipment point. Thus goods from the various portions of the Rhine Valley which move by water to the sea change from river transportation to ocean transportation at some point in the delta. Goods moving from the sea to these same areas make a similar shift. Consequently it is not surprising that Rotterdam is the greatest port of the Rhine.

The central location of the country also fosters trade. It is bordered by Germany and Belgium, and is close to the United Kingdom and France, while the Rhine provides easy communication with Switzerland and sections of central Europe. Its location on the North Sea aids in promoting ocean commerce. Accordingly, it has close contacts with the most productive sections of the continent, a condition destined to encourage trade among an active people.

The deltaic location of The Netherlands also encourages internal water transportation. The land of the delta is low and flat, with many natural waterways. In such a region canals not only are easy to construct, but are necessary for drainage purposes. On the contrary, roads are expensive to construct and maintain, and are of less importance. These conditions explain the fact that The Netherlands has a greater mileage of navigable waterways per thousand square miles of territory than any other European nation.

Its location is responsible for the fact that The Netherlands is politically a buffer state. It forms part of the Belgo-Dutch buffer between France and Germany, and in addition blocks the expansion of Germany seaward. The control of the mouth of the Rhine is of such strategic importance to the larger nations of western Europe that they favor its control by a small state rather than by Germany or any other

major power. Fortunately The Netherlands is not on the most direct route between France and Germany, and fortunately also the low swampy character of its land does not make it well adapted for the movement of armies. Consequently, it has never been a battle ground to the same extent as has Belgium.

### CLIMATE

The bordering seas give The Netherlands a remarkably moderate temperature for an area lying between 50 and 53 degrees north latitude. They also reduce seasonal variations; thus the average January temperature is 34.5 degrees Fahrenheit, and the average July temperature is 66 degrees Fahrenheit. Variations in temperature increase slightly from west to east, but the small size of the country prevents any great differences in this respect.

The coastal dunes and the area immediately behind them receive the most rainfall, while the *polders* receive the least. Although the average annual rainfall is only 28 inches, rain falls on 204 days in the year, and snow on 19. The average relative humidity is quite high, usually being over 80 per cent. Thus cloudy or foggy weather is common, the winters being especially damp.

While the climate is at times far from pleasant, the unusually low death rate and the activity of the people indicate that it is favorable to human health and energy. It also encourages agriculture, as it is suitable to most crops, and the winters are sufficiently mild so that grazing is possible throughout most of the year. Transportation is seldom hampered by climate, for only during occasional winters is the temperature sufficiently severe so that the canals and rivers are blocked by ice. When this happens the canals are transformed into ice highways, and skating becomes the favorite activity of the entire population. In general it may be said that the climate is decidedly favorable, and has encouraged all phases of human progress.

### GEOGRAPHICAL DIVISIONS

There are three geographical divisions in The Netherlands, and each has produced its characteristic type of human development. These divisions form belts roughly parallel to the coast. They are: (1) a narrow belt of beach and dune along the coast, (2) flat lowlands occupying most of the western and central portions of the country, and (3) the sand and gravel flats and ridges to the east.

## BEACH AND DUNE

The winds have raised up a wall of sand dunes along the western and northern coasts. In most cases they do not reach a height of more than 30 feet, but in the central part near Haarlem they attain an elevation of 200 feet. These dunes play a vital part in the life of the country, for they form the rampart which protects the lowlands from the sea. Formerly the dunes were constantly shifted by the winds, but today they are held in place by the long roots of bent grass. Where necessary, they are protected from attacks by the sea; and where they are low or altogether lacking, artificial dikes take their place.

To the north the waves were successful in breaking through this line of dunes, and formed the Zuider Zee. Where this occurred the dunes remain above the sea level in the Frisian Islands, but the area inside the dunes is submerged.

Between the dunes and the sea are broad sandy beaches which are due to the landward migration of the dunes during historic times. Many famous summer resorts and bathing beaches line this shore, and during the summer they are crowded with the Dutch from the interior and with visitors from nearby countries.

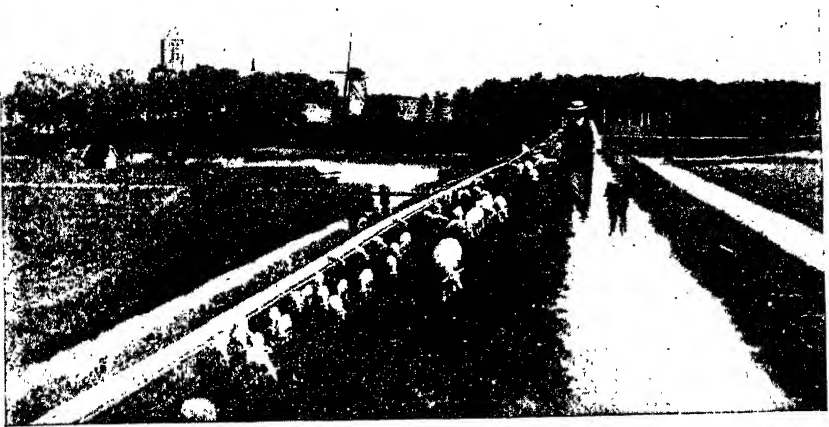
The dunes themselves are usually covered with turf or forest, making delightful home sites, and being occupied by many old estates. Being sandy they are porous and dry, the water which penetrates them coming to the surface along the inner edge. Where this fresh water was available, settlements sprang up which later grew into important cities. Such well known centers as Leiden, Haarlem and 's-Gravenhage (The Hague) occur in such locations.

The horticultural center of The Netherlands is located along the inner edge of the dunes, where their sandy soil meets the clay and peat soils of the interior. The favorable soil, the fresh water from the dunes and the ample rainfall have combined to make this the garden spot of the country. Many fresh vegetables are raised, both for domestic consumption and for export to Germany and Great Britain. Here also are acres of greenhouses where the more sensitive varieties of flowers and vegetables are raised, and where the hardier types are grown out of season. Haarlem is the center of a world-famous bulb industry. Field after field is planted in tulips, hyacinths and narcissus. In the spring, when the flowers are in bloom, these fields present a spectacle of unusual beauty, and attract visitors from all parts of

Europe. The bulbs are sent to every portion of the world, and constitute an export valued at more than \$16,000,000 annually.

#### THE CENTRAL LOWLANDS

Large portions of the central lowlands were originally covered with lakes which occupied the space between the dunes and the higher areas to the east. Many of these bodies of water were filled up by alluvial and peat deposits. Here again the deltaic influence makes itself



Dikes and canals are essential features of the polders. (Courtesy of the Netherlands Railways.)

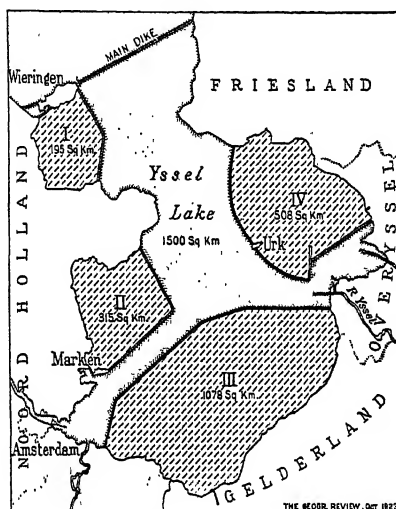
felt. The land is low and marshy, one quarter of the entire country being below the normal level of the sea; and a considerable additional area would be submerged at high tide if it were not for the protection of the dikes and the dunes. The great problems of this area are protection from the sea, and drainage. These are solved by forming *polders*, or sections surrounded by dikes and from which the water is drained. If the land lies above sea level, the problem of drainage is simple, for the water can be diverted into the streams and canals which will carry it to the sea. But if the land is below sea level, the water must then be pumped into the canals which are built at a sufficient elevation so that they will drain naturally to the sea. This pumping was formerly done by windmills which were ever-present features of the Dutch landscape. Today these picturesque mills are disappearing,

and this work is being done by less beautiful but far more efficient electrical pumps.

From time to time the area of arable land has been extended by impoldering lakes or shallow arms of the sea. Thus in 1852 Lake Haarlem was drained, adding 44,460 acres of rich soil to the country. Today the country is engaged in diking and draining a large portion of the Zuider Zee. This body of water was formed in the thirteenth century, when the waves broke through the dunes to the west and converted Lake Flevo, which formerly occupied much of this area, into an arm of the sea. This continued to expand until it attained its present dimensions in 1500. As no dunes border the Zuider Zee it has been necessary to protect the low areas bordering it by some 200 miles of dikes. Unfortunately these dikes have been broken from time to time, with the result that there has been great destruction of property and some loss of life. The present plan of reclamation thus has as its objectives both the prevention of floods and an increase in land area. When completed, this project will add 543,400 acres to the territory of the country. If used entirely for agriculture, this should support a total population of between 250,000 and 300,000. The great enclosing dike which cuts off the Zuider Zee from the sea was completed in 1932. The northwest *polder*, the smallest of the four planned, has already been diked in and drained, and the land plotted out. Thirty-three years was the time set for the completion of the entire project, although at present it seems probable that it may be completed in less. In carrying out this project, the government has been confronted by the problem of what to do with the 6300 fishermen who have been taking from these waters annually fish valued at \$1,500,000. Together with their families they constitute a population of 15,000. Recently a fund of \$1,800,000 has been set aside either to aid in their removal to the North Sea coast, or, if they so choose, to aid them in turning to agricultural pursuits.

**Amsterdam.**—The Zuider Zee was formerly of major commercial importance, being largely responsible for the leading position held by Amsterdam. In the eleventh century this city was a poor fishing village, but after the formation of the Zuider Zee it soon became a commercial center of importance, and was one of the leading Hanseatic ports. But when larger ships came into use, they could no longer use this shallow body of water, and the trade of Amsterdam declined. The construction of the North Sea Canal, which is a ship canal connecting the city with the sea, once again caused it to become a major port. Today it carries on the great majority of the trade with the Dutch colonies, and some

40 per cent of all imports for home consumption come in through this port. In addition to being an important port, it is the largest city of The Netherlands, and a leading banking and manufacturing center. Its present population is estimated at some 750,000, an increase of 46 per cent since 1900. One of its most interesting industries is the cutting and polishing of diamonds, an activity in which it is said to lead the world. Amsterdam is a city built on piles, due to the low marshy character of the land. Its many waterways are the only reminder that it is built on some ninety islands. Thus it not only is the chief city of the



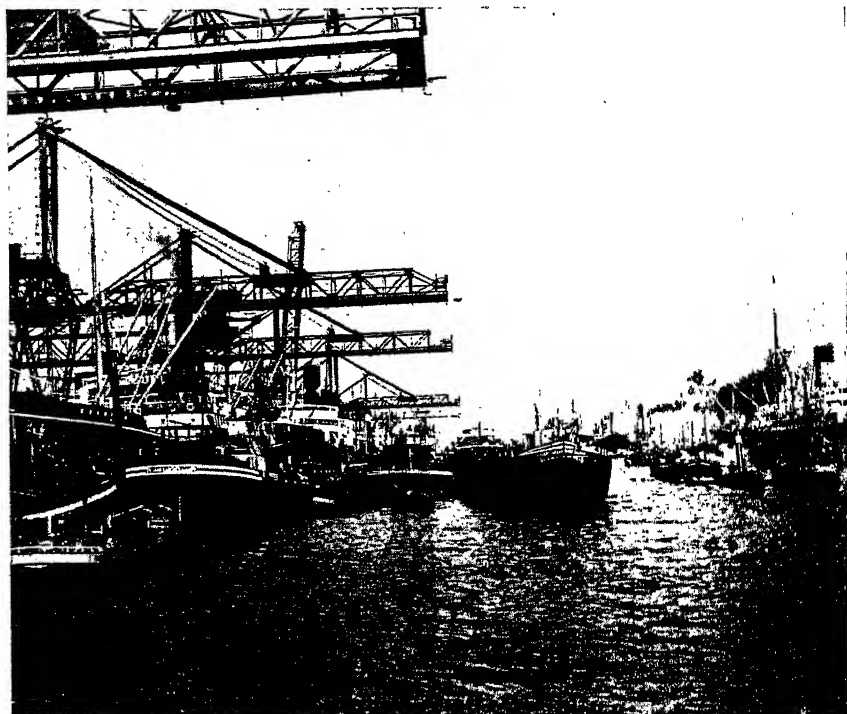
Sketch map showing the project for damming the Zuider Zee and transforming it into four new polders and a fresh-water lake. (From "The Physiographic Regions of the Netherlands," by P. Tesch; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

nation, but it typifies the fact that this is essentially a transition territory between the land and the sea.

**Rotterdam.**—This central area also contains Rotterdam, the chief port and the second largest city of the country. It has a present population of approximately 583,000. Being a world port, it is more cosmopolitan than Amsterdam. It is located on the Lek, one of the branches of the Rhine, and is connected with the Waal, another Rhine branch, and with the Meuse (Maas). Like Amsterdam, it is built on piles, and is threaded by miles of canals. Its position at the mouth of the Rhine makes it one of the great world ports. It is less important than its great competitor, Anvers, as a transfer point for goods which are received or distributed by rail, but it is more important in the transshipment of those bulky products which are carried by the Rhine fleet.

It imports iron ore and grain for distribution throughout the Rhine Valley, and exports coal, iron and steel goods, textiles and chemicals. In addition to handling the trade going to or from Germany, it is an important outpost for Switzerland, Austria and Czechoslovakia.

Besides containing the principal commercial cities, the central lowlands are the site of the most important agricultural activity of The Netherlands. The clay lands of the old provinces of North and South Holland, Utrecht and Zeeland were the first portions of the country



River and ocean shipping meet at Rotterdam and make it one of the greatest of the world ports. (Courtesy of the Netherlands Railways.)

to be developed agriculturally, and they constitute the most productive regions. In these areas the low marshy ground of the *polders* is expensive to drain. Grazing requires the drainage of the surface to a depth of between 12 and 18 inches, while cultivation would require drainage to at least twice that depth. Consequently, in the low areas most of the land is used for pasturage, and black and white Holstein cattle are features of every Dutch landscape. Some sheep and horses are also raised, and large numbers of swine are fattened on the waste products of the dairy industry. Only on the higher elevations or around the

towns and cities is much land cultivated, and this is given over chiefly to vegetables; but nearly every little tile-roofed farm house has a small garden devoted to flowers and garden products.

In this region waterways are very numerous, and form the principal avenues of transportation. Small drainage canals surround each farm and take the place of fences between fields. The task of keeping these waterways free from vegetation is a great one, and requires much attention on the part of the farmer. The larger canals collect the water from the smaller ones and carry it to the rivers or the sea. When the land is below sea level these larger canals are elevated, and the water must be pumped from the small drainage canals. These larger canals are the highways of The Netherlands, and are used by a constant succession of canal boats.

The defense of this portion of the country rests on the ability to flood it if necessary. In the past this means of defense proved effective against the Spanish and the French. Consequently it is not surprising that the Engineers form the oldest branch of the Dutch army.

#### THE EASTERN REGION

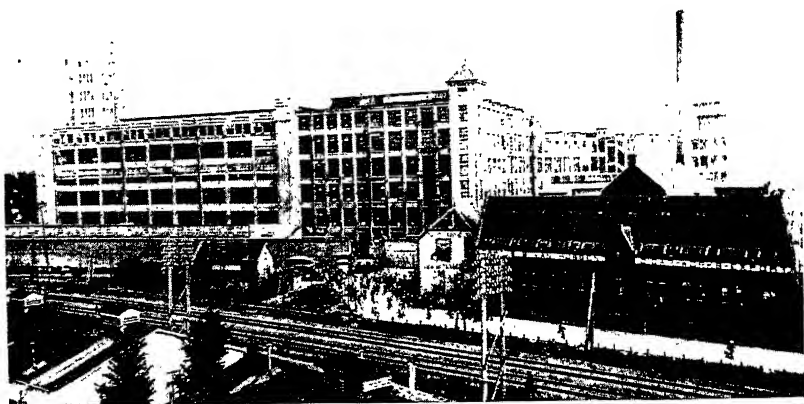
The eastern portion of The Netherlands is higher but less productive than the central section. It is largely a sandy region of glacial origin, and contains numerous swamps and bogs which yield large amounts of peat. The peat bogs are mostly in the northeast, in the provinces of Drenthe and Groningen. The people here are of a different type from those of the other portions of the country. Living standards are lower, and the cultural level is not high. Many of the communities have few contacts with the outside world, and the turf huts occupied by some of the inhabitants are in marked contrast to the attractive dwellings of the central clay district.

The pressure of an increasing population has caused more and more of the eastern provinces to be made agriculturally productive. Alluvial clays border the rivers in the east, and these have always been rich and intensively cultivated; but the sandy areas were long unused, and even today there are considerable stretches of waste land covered with heather, forest or scrub growth and providing only a meager pasturage for sheep. Thus in Gelderland, south of the Zuider Zee, there is an extension of the Belgian Campine known as Veluwe (Bad Lands). In other sections, however, the sandy soils have been improved by fertilization, and yield crops of buckwheat, oats, rye and potatoes. In the south-east, in the provinces of North Brabant and Limburg, there has been



a rapid extension of the dairy industry. North Brabant now ranks second in butter production, and Limburg ranks fifth. Cheese production has not attained the importance in these newer areas that it has in the older clay provinces. It is true that Limburg has given to the world a cheese famed alike for its relish and its obnoxious odor, but most of the Dutch cheese comes from the central districts.

The southeast is also rapidly becoming industrialized. This movement has been aided by the almost incredibly rapid increase of coal production from the Limburg mines. The industries are highly diversified and are providing employment for an increasingly large proportion of the population.



Part of the Philips Electrical Works at Eindhoven. (Courtesy of the Netherlands Railways.)

In these higher lands of the east dikes are unnecessary except to protect the clay lands along the rivers, and drainage is no longer a problem. Consequently canals are not as numerous, and the slow-flowing rivers are the principal waterways.

### AGRICULTURE

Although agriculture does not hold the same relative position as it did in the past, it is still of major importance. It not only provides a considerable proportion of the domestic food supply, but furnishes 40 per cent of all exports.

Approximately 27 per cent of the area of the country is arable land, 37.4 per cent is in permanent pasture, and 7 per cent is covered with woods and forests. While crop production has increased within

recent years, there has been but a slight increase in the amount of land suitable for cultivation. As has been seen, the draining of the Zuider Zee will increase the amount of this land by 10 per cent. Pasture land has increased more rapidly, the new areas devoted to pasture being for the most part on the sandy soils of the southeastern provinces.

**Crops.**—The raising of grains is most important on the better-drained alluvial soils and on the poorer soils of the east. Rye is the principal grain crop from the point of view of acreage, and is grown mostly in the northeast where the sandy soils and the more continental climate provide conditions which are suitable. The acreage devoted to this grain has increased gradually during the past seventy-five years, and the production per acre is very high. Oats ranks second, among the grains, in acreage and first in production. It also is raised in the northeast and in some of the better-drained lands of the central part. This crop has increased rapidly in acreage during the past half century. Wheat is raised on the better-drained lands of the southeast, but the area devoted to this crop has been declining, in spite of the fact that the production per acre is greater in The Netherlands than in any other European country.

Potatoes and sugar beets are the principal root crops raised. Potatoes are produced in large amounts in almost all sections of the country, and are used for food and for the production of alcohol. The acreage devoted to this crop is increasing, and the production per acre is the highest of any portion of the world. Sugar beets are raised mostly

TABLE 83  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS OF THE NETHERLANDS  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Production (thousands of units— bushels, except as indicated)	
	1909-1913	1926-1930	1909-1913	1926-1930
Rye.....	557	484	16,047	15,882
Oats.....	346	378	19,434	22,860
Wheat.....	138	137	4,824	5,908
Barley.....	68	72	3,271	4,006
Potatoes.....	411	427	87,573	124,019
Sugar beets.....	145	153	1,794 <sup>a</sup>	2,090 <sup>a</sup>
Flax.....	33	37	17,276 <sup>b</sup>	23,795 <sup>b</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> Unit, pound of fiber.

in the south, and the production per acre is likewise the highest of any nation in the world.

The raising of truck products is of increasing importance and takes up 3.32 per cent of the total area of the country. This activity is important on the better soils of the north, and from here fresh vegetables are exported to Germany in considerable amounts. It is also important in the west near the inner edge of the dunes, where a large acreage is also utilized in the raising of fruit and flowers. Some of the vegetables from this section are exported to Britain.

TABLE 84  
CONSUMPTION OF FERTILIZERS, 1930<sup>1</sup>  
(1000 kg.)

Kind	Belgium	Denmark	The Netherlands
Superphosphate of lime....	274,100	513,400	270,500
Potash.....	130,700	79,400	408,500
Nitrate of soda.....	140,100	45,800	59,500
Sulphate of ammonia.....	179,000	37,300	89,300
Synthetic nitrogen.....	47,200	133,100	96,400

Within recent years the agriculture of The Netherlands has been characterized by increased intensification. This is evidenced by an increased production per acre, by a decrease in the size of farms, and by the larger area devoted to truck farming. The increase in population, with the resulting larger domestic markets and abundant labor, has been in part responsible for this movement. Today the farms are small, the majority of them being under 12 acres. These small farms, combined with abundant labor, have caused hand agriculture to dominate. The high yields which would normally result from such a condition have been increased by the application of science to cultivation and fertilization. Agricultural education is well developed, and The Netherlands use more fertilizer per acre of crop land than does any other nation. In spite of its high production, the country does not produce enough food to supply its own needs, and some 25 per cent of its imports consist of foodstuffs and live animals.

**Livestock.**—In the poorly drained sections of the central part of the country the raising of livestock is the most important phase of agriculture. Some horses are raised, especially in Friesland, and swine are raised to utilize the waste products of the dairy industry. However, the

<sup>1</sup> *International Yearbook of Agricultural Statistics, 1930-31.*

raising of cattle is the most important phase of the livestock industry, and they are raised primarily for dairy purposes. In the central part this is the only important agricultural activity, while in the better-drained areas it is combined with cultivation. In the older provinces of the west, such as North and South Holland and Utrecht, the production of cheese is of major importance. Alkmaar in North Holland is the great cheese market of the country. It is interesting to note that in South Holland and Utrecht the cheese is still made by the farmer in his home, while in the other provinces most of it is manufactured in factories. Friesland produces both butter and cheese in large amounts, but



Dairying has long been one of the most characteristic occupations of the Netherlands.  
(Courtesy of the Netherlands Railways.)

in most of the eastern provinces butter is the most important product. The leading provinces in butter production are Friesland, North Brabant, Overijssel, South Holland and Limburg. Again in South Holland and Utrecht much of the butter is still made on the farm, while in the other provinces it is made in central creameries.

The dairy industry provides one of the nation's most important groups of exports. In 1930 butter, cheese and condensed milk were exported to the value of \$73,583,000. The export of dairy products is materially aided by the government, which maintains stations where all such products designed for export are tested and stamped with the government seal guaranteeing quality. Thus the foreign purchaser is assured of the quality of the product which he buys, and as a consequence Dutch butter and cheese command the highest prices.

## MINERAL RESOURCES

Coal is the only important mineral resource of The Netherlands. It is located in the extreme southeastern portion of the country in the province of Limburg. Recent estimates place the reserves at 5,000,000,000 tons, or approximately one-half as great as those of Belgium and one-third of those of France. For a long time these deposits were but slightly used, and their size and importance were not appreciated. Some mining was begun prior to 1900, but it was not until the World War prevented the nation from securing its normal imports that the exploitation of these reserves was seriously undertaken. Since that time production has increased with almost unbelievable rapidity. Thus in 1898 only 150,000 tons were mined, while in 1930, 12,211,083 tons were produced. As a consequence the country is today nearly self-sufficient in fuel supplies, whereas before the war almost its entire demand had to be supplied by imports.

The industry centers around the city of Heerlen, which has increased its population from 5000 to some 45,000 since the beginning of the century. The eight mines which furnish the country's production are among the largest and best equipped of any in Europe. The majority of the coal is of excellent coking quality. In 1930 the country produced 2,600,000 tons of foundry coke and 700,000 tons of gas coke. The manufacture and sale of briquets is also an important phase of the industry.

TABLE 85  
PRODUCTION OF COAL IN THE NETHER-  
LANDS  
(thousands of metric tons)  
(U. S. Department of Commerce)

Year	Production
1913.....	1,873
1923.....	5,595
1924.....	6,180
1925.....	7,117
1926.....	8,843
1927.....	9,488
1928.....	10,920
1929.....	11,581
1930.....	12,211

The foreign trade in coal is considerable, in spite of the fact that the nation mines a sufficient amount to supply 94 per cent of its needs. Thus in 1930 it imported 9,113,000 tons of coal, 289,000 of

coke and 329,500 of coal briquets. In the same year it exported 3,899,500 tons of coal, 2,080,000 of coke and 194,000 of briquets. Nearly half the coal exports went to Belgium, and over half of the coke and briquets went to France. Germany was also an important purchaser of all three products. The major part of all the imports came from Germany. If coal production continues to increase as rapidly as it has within recent years, the country will soon have an export surplus of this fuel.

### MANUFACTURING

The Netherlands has long been important in the manufacture of food products. This activity arose as the result of a surplus of certain agricultural products at home and because of the imports of raw food products from the Dutch colonies. The production of butter, cheese, condensed milk, cocoa, chocolate and refined sugar are examples of industries of this type. Those utilizing local raw materials developed in the areas where those products were produced, while those using colonial products grew up around the ports, especially around Amsterdam.

Recently industry has expanded in both size and variety. The manufacture of such products as textiles, ships, machinery, electrical equipment, chemicals and shoes has assumed important proportions. This development has been due to a number of factors, among the more important of which are the pressure of a rapidly increasing population, and the desire to become independent in the production of certain essential products. The last factor became important as a result of conditions during the World War, when the country found itself unable to secure certain needed goods. Consequently industry is today the most important economic activity of The Netherlands, both because it provides employment for more workers than any other activity, and because it furnishes the most valuable exports. The Netherlands has thus changed from an agricultural and commercial nation to one in which industry is of first importance.

Industrial activity is quite widely scattered. A manufacturing center is springing up around the coal mines of Limburg, and here such products as cement, glass, paper and pottery are produced. Another southern province, North Brabant, has the most diversified industrial development of any section of the country. In the western portion of the province are numerous beet sugar factories. In this province also is Eindhoven, noted for its electrical products. Tilburg is one of

the greatest woolen centers, Breda is noted for its rayon factories, and de Langstraat is important for leather and shoe production. Other provinces also are important in industrial activity. North of Amsterdam is the center of lumber manufacturing. Twente is noted for the production of cotton textiles, while Amsterdam, Rotterdam and Utrecht are all important for textile products. Around Rotterdam and Amsterdam and along the rivers of the west are the great shipyards. Recently a new center for the production of pig iron has grown up along the North Sea Canal. The diamond cutting of Amsterdam employs comparatively few men, but turns out products which rank second only to cotton textiles in value. Numerous other small industrial centers are springing up all over the country, and while they detract somewhat from its beauty, they add materially to its economic importance.

#### TRANSPORTATION FACILITIES

The internal and foreign commerce of the country is aided by its excellent facilities for transportation. The deltaic influence is shown by the dominance of waterways. There are some 5000 miles of navigable canals and rivers, and these are extensively used. In addition, there are 2277 miles of railways and 15,534 miles of roads. Per 1000 square miles of territory, The Netherlands thus has 385 miles of railways and 1195 miles of roads.

It is doubtful whether The Netherlands is surpassed in the density of its transportation net by any nation throughout the world. The country is also unusually well provided with commercial air routes. From the point of view of passengers carried, mail and freight carried, or distance flown, The Netherlands exceeds any small country throughout the world, and is exceeded by only four of the large world powers. The nation also operates the longest air line in the world. It extends 9195 miles, from Amsterdam to Bandoeng, Java.

Considering the extent of its commerce, it is not surprising that The Netherlands should have a large merchant marine. In 1931 it had 3,110,000 gross tons of seagoing vessels of 100 tons or over. This places it eighth among the world powers and fifth among the nations of Europe in merchant tonnage. In per capita tonnage it is surpassed only by Norway. These vessels carry not only the goods of The Netherlands, but also those of other nations, thus bringing in an important income to the country. The Dutch are able sailors and, in addition to

manning their own merchant marine, they are to be found on the ships of every other great power.

### COMMERCE

Since the period of the Hanseatic League, the commercial importance of The Netherlands has been great. Its location on the delta of Europe's most important river, its extensive colonial trade, and the economic activity of the country itself have combined to give it a great foreign trade and to make it an important *entrepôt* center.

In 1930 it ranked second only to Denmark among the European powers in per capita foreign trade. In total trade it normally ranks fifth among the nations of the continent, although in 1930 it passed Italy and occupied fourth place. The average annual foreign trade, including imports and exports, for the five-year period 1926-1930 was valued at \$1,775,620,000, while in 1930 the total trade was valued at \$1,666,100,000.

Data on imports and exports, however, provide an incomplete picture of the commercial importance of The Netherlands, as they do not take into account the very large *entrepôt* trade of the country. Statistics concerning the total tonnage of goods loaded and discharged at its ports give a better indication of this importance. In 1930 this tonnage amounted to 97,360,000 metric tons, which was greater than that handled by the ports of any other European nation except possibly those of the United Kingdom.

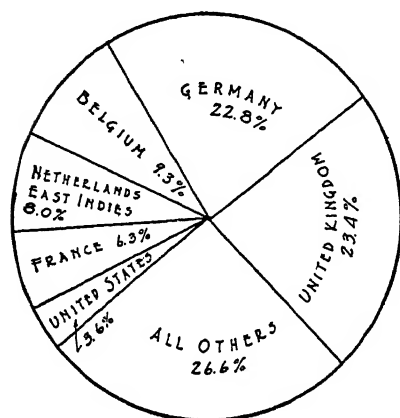
This tremendous movement of goods has placed Rotterdam and Amsterdam among the great ports of the world. On the basis of the volume of merchandise handled by both ocean and river shipping, Rotterdam is the most important of the European ports. Thus for the first eight months of 1931 it handled 19,296,000 tons, as compared with 15,355,000 handled by Hamburg and 13,520,000 by Anvers. For the same period in 1930 the figures were: Rotterdam, 23,420,000; Hamburg, 16,888,000; and Anvers, 14,704,000. Amsterdam, the port through which most of the colonial trade passes, handled 3,736,000 tons in the first eight months of 1931, which placed it slightly ahead of Bremen, the second German port, in this respect.

The most important exports of the country are manufactured and semi-manufactured goods; foodstuffs rank second and raw materials third. Manufactured and semi-manufactured goods also make up the most important imports, while raw materials are second and foods third. Textiles, coal and coke, meats, dairy products and wireless

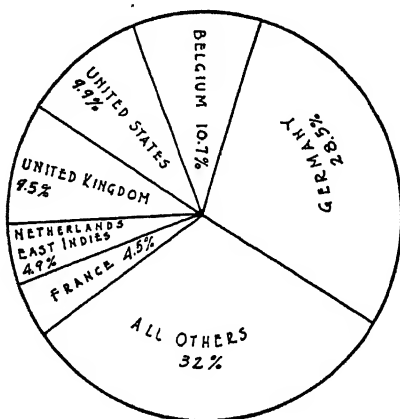


apparatus are the most important domestic exports; while textiles, machinery, coal, grains, and iron and steel products are the leading imports for consumption. The leading products for transshipment which enter The Netherlands' ports from the sea are iron ore and grains, while coal and machinery come down the Rhine for transshipment to ocean vessels.

Being a great commercial nation and having a large merchant marine, The Netherlands has been interested in all conditions which promote trade. It has encouraged the application of the principle of the



Destinations of Dutch exports; average, 1926-1930. Percentage of total exports. (U. S. Department of Commerce.)



Sources of Dutch imports; average, 1926-1930. Percentages of total imports. (U. S. Department of Commerce.)

freedom of the seas, and has opposed tariffs or other trade restrictions. Its recent action in forming a common customs union with Belgium is in accord with these principles, and should react to the commercial advantage of the nation when world economic conditions become stabilized.

### THE COLONIES OF THE NETHERLANDS

The Dutch East Indies constitute one of the most valuable groups of colonies in the world. They have a total area of 733,714 square miles, and a population of 52,824,600. Located in the tropics, they produce a variety of such products as sugar, rubber, coffee, tea, rice and tobacco, which are in great demand in the more temperate areas. They also contain important deposits of tin and petroleum, and these minerals are extensively exploited. The Dutch have proven themselves capable

colonial administrators, and many portions of the islands are highly productive. Many of the colonial products go to The Netherlands for distribution or manufacture. Dutch ships carry much of this trade, and much Dutch capital is invested in the islands. They have thus made valuable contributions to the economic life of The Netherlands.

The Dutch West Indian possessions are much smaller and of but slight economic importance. They consist of Dutch Guiana and the colony of Curaçao. They also are tropical lands, producing such products as sugar, rum, cacao, coffee and rice, and containing some petroleum, but their commerce is too small to make any important contribution to the mother country.

### BIBLIOGRAPHY

- Bogardus, J. F., "The Population of the Netherlands," *Economic Geography*, 1932, vol. 8, pp. 43-52.
- Jansma, K., "The Drainage of the Zuider Zee," *Geographical Review*, 1931, vol. 21, pp. 574-583.
- Moore, B. F., "Economic Aspects of the Commerce and Industry of The Netherlands," *Miscellaneous Series*, No. 91, U. S. Department of Commerce, Washington, 1919.
- Nabel, E. W., "Coal Industry and Trade of The Netherlands," *Trade Information Bulletin* No. 768, U. S. Department of Commerce, Washington, 1931.
- Ronhaar, J. H., *Leerboek der Economische Geografie—Nederland*, Bij J. B. Wolters, Groningen, 1932.
- Rycksbaron, E. E. A., "Holland's Peaceful Conquest, The Reclamation of the Zuyder Zee," *Bulletin of the Geographical Society of Philadelphia*, 1931, vol. 29, pp. 247-264.
- Scheffler, K., *Holland: The Land and People*, Alfred A. Knopf, New York, 1932.
- Schüssler, F., *Wirtschaftsgeographie von Niederland*, C. F. Muller, Karlsruhe, 1930.
- Van Vuuren, L., *Die Niederlande und Ihr Kolonialreich*, A. Oosthoek, Verlag, A. G., Utrecht, 1932.
- Van Wickel, J. F., and Palmer, J. J. W., "The Iron and Steel Trade and Industry of The Netherlands," *Trade Information Bulletin* No. 470, U. S. Department of Commerce, Washington, 1927.
- Whittelsey, D., "Human Occupation of the Lower Rhineland," *Journal of Geography*, 1930, vol. 29, pp. 41-53.
- Zeeman, K., *Moderne Geografie Van Nederland*, N. V. W. Versluys' Uitgevers—Mij., Amsterdam, 1930.

## DENMARK (DANMARK)

STRATEGICALLY located to control the entrance to the Baltic, and with a combined coast line greater than that of France, it is not surprising that Denmark early became a leading maritime power. Its sailors not only opened up trade routes to all sections of the world, but aided in the establishment of colonies in Greenland, Iceland, the Faeroes, Africa and the West Indies. Important settlements were made in Britain, and Denmark once controlled much of England. Its relations with its neighbors illustrate something of its past power. It was joined with Sweden during the seventeenth century, and controlled Norway until the Napoleonic Wars. Its past importance is also shown by the fact that it levied a toll on all ships going into or out of the Baltic until the beginning of the past century, and this in spite of the opposition of most other commercial nations.

Denmark received a serious set-back as a result of its part in the Napoleonic Wars. The British captured the Danish fleet and destroyed the Danish merchant marine. It took nearly forty years to recover from their loss. A more permanent decline resulted from the decreasing commercial importance of the Baltic and the changes following the Industrial Revolution. The shift of trade to the North Sea diminished the importance of Denmark's location and the nation lacked the resources necessary to become an important industrial power. Its small size and the poverty of part of its soil limited agricultural possibilities, and for a time the country was in a desperate plight.

In spite of these handicaps, the nation has again achieved an enviable position among the European states, an excellent demonstration of the capacity of its population. Today it is one of the most prosperous of the continental powers. This prosperity is based largely upon a specialized development of agriculture, and upon commercial activities. Its population is unusually capable and well educated, and the nation has produced leaders of world importance in various cultural activities. Although the country is no longer of major importance from a military or political point of view, it has taken an active part

in all phases of international cooperation, and has produced many leaders in these fields.

### POPULATION

**Size and Distribution of the Population.**—According to the census of 1930, Denmark has a population of 3,542,210, which gives it a population density of 214 per square mile. This density is far less than that of Belgium and The Netherlands, but is great for a nation



A typical Danish farmhouse. (Courtesy of the Danish Consul General, New York.)

which is primarily agricultural. Denmark also differs from the other two nations in that the majority of its people are rural, only 44 per cent residing in large towns and cities. Accordingly the population is evenly distributed over those portions of the country where agriculture is possible. Formerly poor soil and drainage caused the west to be sparsely populated, but the recent reclamation of these lands has led to a rapid increase in the numbers inhabiting this section.

**Character of the Population.**—The great majority of Danes belong to the northern long-headed race, and have all the physical characteristics common to that group. They are a remarkably active and capable people, as is evidenced by their many accomplishments. A well

developed system of schools and colleges has almost eliminated illiteracy, and has aided materially in increasing the ability of the population. Few people throughout the world have so successfully adjusted themselves to their environment as have the Danes.

**The Occupations of the Population.**—Agriculture is the principal activity of Denmark, as is shown by the fact that 34.8 per cent of the working population is engaged in that occupation, while 27 per cent is engaged in manufacturing and 16.7 per cent in commerce and transportation. Even these statistics do not present a true picture of the importance of agriculture, for most of the manufacturing is concerned with the preparation of agricultural raw materials. Commerce and transportation have always been important, and they remain so, as is shown by the relatively large proportion of the population engaged in those activities.

### SITUATION

Denmark occupies a portion of the Jutland Peninsula and some 350 islands, only 100 of which are inhabited. It is really an arm of the great European plain, reaching out toward the Scandinavian Peninsula and almost blocking the entrance to the Baltic. The Skagerrak separates the peninsula from Norway, and the Kattegat separates its northern section from Sweden. South of the Kattegat the entrance to the Baltic is blocked by a number of islands, the largest of which are Fyn and Sjaelland. The former is separated from the peninsula by a narrow body of water known as the Little Belt, and from the latter by the Great Belt. Sjaelland in turn is separated from the Swedish coast by the Sound, a body of water which is only three miles wide at its narrowest point. The possession of the peninsula and these islands thus gives Denmark control of the natural entrances to the Baltic. Not until the construction of the Kiel Canal was it possible to enter or leave the Baltic without passing through Danish waters.

It was this fact that enabled Denmark to collect tolls for entry to the Baltic, a practice which it inherited from the Hanseatic period and continued until 1857. These tolls were collected at the old toll city of Helsingör on the northern or narrowest portion of the Sound. It was also responsible for the fact that Köbenhavn, on the southern or widest portion of the Sound, became a great distributing center for the Baltic territories. This is a natural point for the transshipment of goods entering or leaving the Baltic. As long as this sea was the most important body of water in northern Europe, Denmark occupied a most

strategic position from the point of view of commerce and power, but as the relative importance of the Baltic declined and that of the North Sea rose, the location of the country became of less value.

Its position is also of importance because it constitutes a natural stepping-stone between western and central Europe and the Scandinavian Peninsula. Its importance in this connection has been increased within recent years by the use of car ferries across the two Belts and the Sound. Goods can thus go directly from Germany to the peninsula without break-of-bulk, and passenger cars are transported in the same manner. It is not surprising, therefore, that the relations of Denmark and the Scandinavian countries have always been close, although not always friendly.

The peninsular and island location has permitted the nation to develop and maintain cultural and economic individuality, and to keep its independence. In spite of the fact that no natural boundaries separate it from Germany, and in spite of German attempts at penetration, it has been able to maintain its political and cultural identity.

The location of Denmark has also had an influence on its climate, for the surrounding waters have decidedly modified temperature and rainfall, and have given the country a marine climate.

### CLIMATE

Although the climate is marine, it is subject to slightly greater extremes than are to be found within the British Isles or even along the southern Norwegian coast. It has an average winter temperature of about 32 degrees Fahrenheit, and during that season it is open to the cold winds from eastern Europe. Occasionally the winters are so severe that ice hampers the traffic through the Sound, although it has not been completely frozen over since 1836. The summers are warm, as is illustrated by an average July temperature of 62 degrees Fahrenheit. Rainfall averages about 25 inches a year and is fairly evenly distributed throughout the seasons. It is slightly heavier on the west and is least on the east and in the lee of such elevations as exist. Although the rainfall is not heavy, there is a great deal of cloudy, foggy weather, the country receiving on the average about one-fourth of the sunshine possible.

From the point of view of human welfare this climate is excellent, and it is not surprising to find an active and energetic population. From the point of view of agriculture it tends to encourage the raising of animals. The cool, cloudy summers are better adapted to grasses than

to cereals, and the marine influence lengthens the period during which outside grazing is possible.

### PHYSICAL FEATURES

Being a small nation with an area of only 16,574 square miles, and lying entirely within the European plain, Denmark is characterized by a considerable amount of uniformity in structure and relief. Prior to the last glacial epoch, the islands and much of the peninsula



Countryside in central Denmark. (Courtesy of the Danish Consul General, New York.)

seem to have been submerged and to have formed part of a great reef of chalk and limestone. The ice sheets moving south from the Scandinavian Peninsula laid down deposits of glacial material upon these reefs, thus forming the present lands of the kingdom. Toward the south and east the coarser glacial material was piled in the form of morainic hills. The finer materials were spread over the areas lying to the north and west of these moraines. These conditions have led to a general uniformity of relief. The moraines form the only elevations, the highest of these being only about 500 feet.

Although the general relief is low and uniform, there is a considerable amount of local variation. Only toward the west is the country flat and swampy. Most of the rest of the territory is a rolling hill and valley country, with frequent lakes. The wooded hills and culti-

vated lowlands provide sufficient variation to make the scenery extremely attractive. Toward the north and west the hills give way to morainic lowlands covered with heath and moor growth, and this gradually merges into a region of peat bogs and sand dunes.

In parts of the country the soil is infertile and coarse, being poorly adapted to the raising of crops. Drainage and soil are particularly poor toward the western side of the peninsula, but within recent years this section has been rapidly reclaimed, and the population is growing more rapidly here than in any other portion of the kingdom. The bogs have been drained and the moors fertilized and made usable by a top dressing of marl. The destruction of the forests of the west exposed that section to encroachment by the sand dunes. Today these dunes and other sandy areas are being planted in pine and fir, thus serving the threefold purpose of anchoring the dunes, providing a much needed supply of timber, and putting to economic use sections which had formerly been waste. Truly there are few better examples of man's successful modification of his environment than are to be found in western Jutland.

**Coast Lines.**—There are considerable differences between the eastern and western coasts of the country, and these have played a part in Danish history. The North Sea coast is barren, dangerous, and lined with sand dunes. In some places the sea has broken through these dunes, forming large lagoons, while in others the dunes have been submerged, making them dangerous to shipping. Consequently, this coast has been but slightly used for commerce, although today Esbjerg, the principal port, carries on a large trade with Great Britain. On the other hand, the eastern coast with its irregular coast line and numerous islands provides many harbors, and there have been located the principal ports of Denmark. In the past the peninsula has thus looked to the east rather than to the west. It has been only recently that economic necessity has compelled the nation to trade principally with the North Sea countries.

**Köbenhavn.**—Köbenhavn ("Merchant's Haven") is by far the largest city of Denmark, and contains a population of 771,753, or nearly 22 per cent of that of the entire country. It is not only the capital, but the principal cultural and economic center. Its attractive buildings, clean streets, schools and universities, museums and theaters make it a delightful city.

In the twelfth century Köbenhavn was a small fishing village, but as commerce became more important in the Baltic it was so situated as to take a leading part in that trade, and it soon became an important commercial city. The character of the channels of the Sound forces



most of the shipping going into or out of the Baltic to pass its door, and it naturally became an important transshipment point for Baltic trade. Its position in this connection has been strengthened by the creation of a free port, which really resembles a city within a city. This free port is excellently equipped with docking space and all types of modern equipment for loading, unloading and storage. Goods come here from all sections of the world to be distributed throughout the Baltic territories, and Baltic goods arrive to be reshipped to all the great consuming nations. Recently the city has faced increased competition due to the fact that the Sound is too shallow for the use of the largest ships, and due also to the use of the Kiel Canal.

### AGRICULTURE

**The Development of Agriculture.**—Agriculture has always been the dominant activity of Denmark, but it has changed radically in character within recent years. Some sixty years ago the people were carrying on a traditional system of general agriculture, with most of the available land devoted to the raising of grains, especially wheat. As a result, the soil was rapidly diminishing in fertility and the crops were poor. To add to the woes of the Danish farmer, the European markets began to be flooded by cheap grain from the virgin lands oversea. Exhausted soils, a limited area and a less favorable climate made it impossible to compete with such imports, so the European markets for its agricultural surplus disappeared. As a result of these conditions, the country was poverty stricken and the situation seemed hopeless. It was here that the energy and capacity of the Danes were demonstrated. Instead of resigning themselves to their fate, they made a careful study of their own country and of nearby markets in an effort to develop a system of agriculture which would be a success. They soon discovered that, although the soil and climate were but moderately well adapted to grains, they were excellent for the production of forage crops. In the growing industrial centers of Great Britain and Germany they saw tremendous markets for meat and dairy products, in the supply of which a nearby territory would be at a decided advantage. The country was well adapted to the raising of animals, and the markets for animal products were at hand. Furthermore, the raising of animals would help in again building up the fertility of the soil. Accordingly, the whole system of agriculture was changed, and Denmark embarked on a program which has made it one of the most prosperous nations of the continent.

At present the country is chiefly concerned with the raising of cattle, swine and poultry, and the exportation of dairy products, bacon and eggs. Its success in this connection has been due in no small part to the intelligent cooperation of the government. It aided in the breaking up of the large estates and the division of the land into small holdings. Today more than half of the farms are of less than 13 acres, and there are some 70,000 holdings of less than 2 acres. Few farms exceed 100 acres in size. Some 90 per cent of all the holdings are farmed by the owners, a condition very rare in western Europe. Here again the government has played its part. As a result of the Agricultural Holding Act, it will loan to anyone who has one-tenth the price of a farm



Typical landscape on the Island of Sjælland. (Courtesy of the Danish Consul General, New York.)

the amount necessary to make the purchase. The government has also aided materially by designing a system of education to meet the needs of agriculture. The rural high schools and the People's High Schools provide agricultural training for youth and adult alike. In addition, there are some 20 advanced agricultural schools and colleges in the country. Thus a knowledge of scientific agricultural methods is almost universal and has played a prominent part in the present success of the country.

The large number of small farmers would, however, be at a decided disadvantage if they had to undertake to market their goods and purchase their supplies individually. In response to this condition, there has been a wide development of cooperative societies. There are both buyers' cooperatives and sellers' cooperatives. The sellers' cooperatives

handle some 95 per cent of all the surplus produced on the farms and supervise all exports. They own large creameries and packing plants, and carefully inspect and stamp all the goods passing through their hands. Those products designed for export are carefully inspected and stamped with the government trade-mark guaranteeing quality. Consequently the highest prices are obtained for their goods in the foreign markets.

The major portion of the products exported by the cooperatives goes to the United Kingdom, this country in 1930 taking 58.8 per cent of all Danish exports. Denmark is consequently very sensitive to changes in the British market, and the close economic relationships between the two countries have resulted in close ties of friendship. Germany is the second most important market for Danish agricultural products, and Sweden is third, but together they take less than one-half the amount shipped to the United Kingdom. Each year the buyers' cooperatives import large amounts of food for the livestock, as it is impossible for the country to produce enough to supply its own needs. They also aid in the purchase of agricultural machinery and other necessary supplies for the farmer.

**Crops.**—Nearly 7,000,000 acres, or 66 per cent of the total area of the country, are under cultivation. Grains occupy nearly one-half of the cultivated acreage, and green fodder and cultivated pasturage occupy slightly less than one-third, most of the remainder being used for the growth of root crops. In addition to the cultivated areas, there is a considerable acreage of pasture, so that the greater portion of the land is productive.

Oats is the most important grain crop from the point of view of both acreage and production, and is closely followed in importance by barley. Wheat and rye are considerably less important. A large acreage is devoted to the raising of fodder beets, and potatoes and sugar beets are raised in some quantities. Through careful use and fertilization of the soil the production of crops per acre has been raised until Denmark ranks on a par with Belgium and The Netherlands in this respect. In spite of the high production, however, the country does not produce enough food to meet its own demands, and must import yearly large amounts of grains and animal foods.

**Livestock.**—The agricultural prosperity of Denmark has been built upon the development of the dairy industry and the exports of dairy products. This is an industry well adapted to the environment, and one which is encouraged by the large markets in neighboring

TABLE 86  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS IN DENMARK  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Production (thousands of units— bushels, except as indicated)	
	1909-1913	1926-1930	1909-1913	1926-1930
Oats.....	1,021	999	53,604	67,149
Barley.....	585	875	25,161	44,124
Rye.....	652	415	17,397	10,570
Wheat.....	113	257	5,545	10,556
Potatoes.....	141	177	31,114	33,689
Sugar beets.....	80	89	790 <sup>a</sup>	1,072 <sup>a</sup>
Forage roots.....	647 <sup>b</sup>	985 <sup>c</sup>	11,936 <sup>a</sup>	21,256 <sup>a</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> 1912.

<sup>c</sup> 1927-1929.

industrial countries. In Denmark this industry has been primarily concerned with the production of butter. Its importance in this connection may be seen from the fact that during the five-year period 1926-1930, it produced on the average 374,000,000 pounds annually. Recently there has been a movement toward greater diversification in the production of dairy products, and the output of condensed milk and cheese is increasing. Danish butter has a deserved reputation for high quality and is widely distributed, most of it going, however, to Great Britain. Live cattle, both for meat and for breeding purposes, are exported in some quantities, and there is also a small exportation of beef.

TABLE 87  
LIVESTOCK AND POULTRY, 1930<sup>1</sup>

Country	Horses	Cattle	Swine	Poultry
Denmark.....	494,465	3,057,438	4,871,897	21,039,000 <sup>a</sup>
The Netherlands.....	297,000	2,352,000	1,990,000	24,637,204
Belgium.....	249,014	913,125	1,249,621	23,000,000 <sup>b</sup>

<sup>a</sup> 1929.

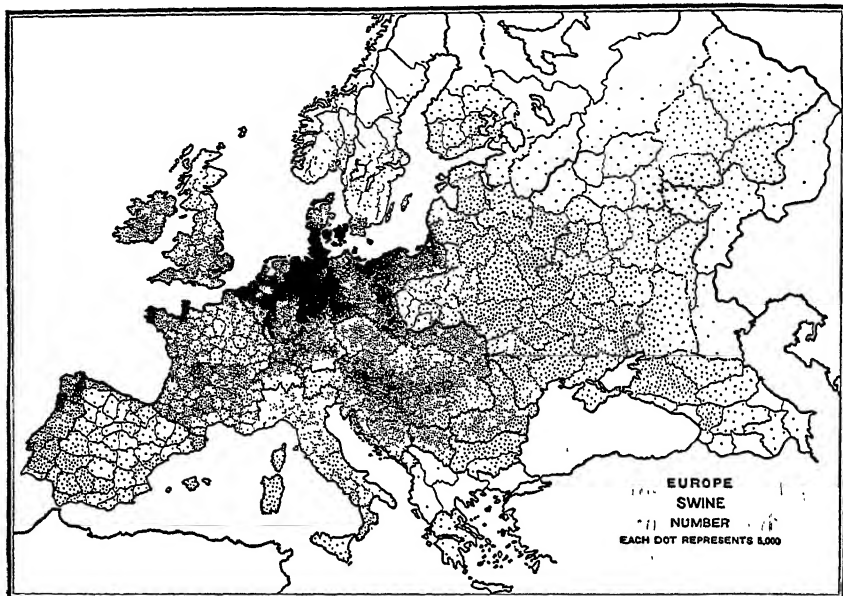
<sup>b</sup> 1928.

Swine began to be raised in large quantities in order to provide a use for the waste products of the dairy industry. Today Denmark has more swine per square mile or per inhabitant than any other nation in

<sup>1</sup> *International Year Book of Agriculture, 1931.*

Europe, and it ranks second only to the United States among the world powers in the exportation of pork products.

Poultry raising has proven highly profitable, as it also uses waste dairy products and is well adapted to the small farm. Today eggs make up an important item of export.



The large swine production of Denmark, Germany, Belgium and the Netherlands is largely the result of near-by markets, governmental encouragement and an abundance of such foods as barley, potatoes and dairy by-products. (U. S. Department of Agriculture.)

Due to the difficulty of importing fertilizers and foodstuffs during the World War, large numbers of livestock were killed, and the total numbers were decidedly reduced, but they have since increased to more than the pre-war figures.

### FISHING

The long coast line, numerous harbors, unfavorable character of portions of the soil, and valuable inshore and offshore fisheries naturally turned the attention of a portion of the population to the sea. Consequently it is not surprising that fishing is one of the oldest industries of Denmark. The inshore fisheries catch small cod, plaice, eels, herring and mackerel, while large cod, haddock and plaice are caught offshore. Although only a small fraction of the population is

permanently engaged in fishing, there are over 15,600 boats in the fishing fleet, and the annual catch is valued at between \$9,000,000 and \$10,000,000.

### NATURAL RESOURCES

Denmark has very little mineral wealth. Peat in the northwest and small deposits of lignite in the southwest are the only native fuels. Clay and limestone furnish the raw material for cement manufacturing, and bricks are produced around some of the clay deposits. The little island of Bornholm contains deposits of kaolin clay used by the porcelain industry of Köbenhavn, but other mineral wealth is lacking.

Most of the original oak forests of the country were removed to provide timber for shipbuilding, and the beech forests were used extensively for charcoal. Today only some 8 per cent of Denmark is forested. About half of these forests are located on the islands, and half on the mainland of the peninsula. Nearly half of the forests consist of conifers, while 41 per cent are of beech. Efforts have recently been made to increase the forest area by planting waste lands. Stringent regulations are also in force, with the object of preserving the existing supply. However, the nation has to import a large proportion of the wood used.

### MANUFACTURING

Manufacturing is chiefly concerned with the preparation of food products for market. The dairy industries, slaughtering and meat pack-

PRODUCTION OF BUTTER, BACON AND MARGARINE IN DENMARK.								
PRODUCTION IN 1,000,000 POUNDS								
PRODUCT	YEAR	100	200	300	400	500	600	700
BUTTER	1926-30							
	1930							
BACON	1926-30							
	1930							
MARGARINE	1926-30							
	1930							

The production of butter, bacon and margarine in Denmark. (U. S. Department of Commerce.)

ing, flour milling and brewing are all important. Curiously enough in a land famed for its butter, the manufacture of margarine is also of importance. Few other industries of any importance exist. Clay is turned into bricks and pottery, and a fairly large cement industry

depends upon local supplies of clay and limestone. Shipbuilding has always been important, and has increased rapidly within recent years. Machinery, cotton textiles, and oils and varnishes are also produced in moderate quantities. Köbenhavn is the leading manufacturing center, turning out a diversity of products but especially noted for its gloves and ships.

### COMMERCE

The peninsular and insular position of Denmark, its location between two important seas, the existence of the fishing industry, and an unfavorable local environment for agriculture combined early to cause the Danes to become a commercial and colonizing people. Consequently a merchant marine soon came into being, and since then the country has always had a large merchant fleet in proportion to its population. In 1930 the total tonnage of its merchant fleet was 1,164,970 tons, a figure only slightly below that of Italy and The Netherlands. The country ranks second only to Norway in the merchant tonnage per capita. Obviously, such a large tonnage is not needed in its own trade, so that much of it is used in hauling for other nations.

TABLE 88  
DESTINATIONS OF DANISH EXPORTS  
(U. S. Department of Commerce)

Country	Percentage of Total Exports		
	1913	1926-1930	1931
United Kingdom.....	56.9	56.8	60.1
Germany.....	24.8	19.3	13.5
Sweden.....	8.3	6.7	6.4
Norway.....	2.7	4.1	5.1
Finland.....	1.3	1.9	.8
All others.....	6.0	11.2	14.1
Total.....	100.0	100.0	100.0

From the point of view of value, the foreign trade of Denmark is about on a par with that of Switzerland and Spain. As might be expected in a country of this type, imports exceed exports, but the unfavorable balance is more than compensated for by returns from foreign investments and from the merchant marine. Exports consist chiefly of goods of agricultural origin; in fact, these make up some 72 per cent of all exports, the only others of importance being machin-

ery, ships, and automobiles assembled from imported parts. Imports, on the other hand, are more varied. Some 23 per cent consist of human and animal foods, while textiles, fuels, metals, fertilizers and machinery constitute other important groups. The country also re-exports foreign products in considerable amounts. In 1929 such re-exports as were recorded amounted to \$25,862,000. These statistics, however, do not give a true picture of the re-export trade, as many items are not included.

TABLE 89  
SOURCES OF DANISH IMPORTS  
(U. S. Department of Commerce)

Country	Percentage of Total Imports		
	1913	1926-1930	1931
Germany.....	38.3	32.3	33.6
United States.....	10.2	14.0	10.3
United Kingdom.....	15.7	13.5	15.1
Sweden.....	8.3	6.6	6.1
France.....	2.5	3.8	3.6
All others.....	25.0	29.8	31.3
Total.....	100.0	100.0	100.0

### DANISH COLONIES

The Danish West Indies were sold to the United States during the World War; Iceland became a sovereign state in 1918, and the Faeroe Islands are classified as part of Denmark. Consequently Greenland is the only remaining colony. Greenland is a far-northern, ice-covered island of but slight importance. It has an area of 827,000 square miles, and in 1921 its population numbered only 14,355, of whom 274 were Danes and 14,081 natives. Only the southwestern coastal areas are suitable for habitation, and there is little to attract any considerable population. Fishing is the principal activity, and the only exports of the island are fish, skins, seal oil, feathers and a little copper ore. The possibilities for increased economic development are slight.

### ICELAND

Iceland has had a varied political career. It was an independent republic between A.D. 930 and 1264. After that it came under the rule



of Norway, and, with Norway, came under the rule of the Danish kings in 1381. When Norway separated from Denmark in 1814, Iceland remained in Danish hands, and continued in the status of a Danish colony until 1918. In that year Iceland was acknowledged a sovereign state, but it is united with Denmark by having the same sovereign. In other words, the king of Denmark is also king of Iceland.

Located in the far north, Iceland is suitable for human habitation because of the warm waters of the North Atlantic Drift, and because of the direction of the winds. Especially in the southwest the cool,



The distribution of population in Iceland. (From "The Renaissance of Iceland," by Earl Hanson; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

marine climate with its many storms seems favorable for human occupation.

This island has an area of 39,709 square miles, and had a population of 108,726 in 1930. It thus has a population density of 2.6 per square mile. Much of the island is waste land, covered with mountains, glaciers and lava. The only section suitable for agriculture is located in the southwest, and here is to be found the majority of the population, as well as Reykjavik, the capital and leading city.

The population of Iceland is progressive, capable and well educated. Its cultural accomplishments are remarkable, and it has produced many noted leaders in various cultural activities. Recently, also, there has been an increase in economic activity which is remarkable, considering the environmental handicaps. The capacity of the population seems to

be due to the selective force of migration combined with the stimulating climate.

Agriculture and fishing are the principal activities. The former occupies the attention of about two-fifths of the population, and the latter one-fifth. The short growing season and cool, moist summers are unfavorable for most crops, but hay grows well and contains high food value. The only other crops raised are potatoes and some quick-maturing vegetables. The suitability of the area for hay has caused the raising of livestock to be the principal agricultural activity. Sheep constitute the most important group of livestock, and there are some 590,000 on the island. Recently the raising of dairy cattle has been on the increase, and Iceland is beginning to export some dairy products.

Although fishing engages the attention of a smaller proportion of the population than agriculture, it provides the chief export. The total value of fish caught in 1926 was estimated at \$6,464,510, and cod represented 90 per cent of this value and herring 10 per cent. Fish are exported to Denmark and the Mediterranean countries. Fishing in the foggy, stormy waters of Iceland is a dangerous occupation, and one which demands mental and physical capability.

Denmark and the United Kingdom supply the major part of the imports of Iceland, and Spain is its greatest export market. In addition to fish, timber, animal oils and yarn are exported in some quantities, while clothing, machinery and foods are imported.

## BIBLIOGRAPHY

- Anderson, S. A., "Iceland's Industries," *Economic Geography*, 1931, vol. 7, pp. 284-296.
- Christensen, C. L., "Agricultural Cooperation in Denmark," *Bulletin No. 1266*, U. S. Department of Agriculture, Washington, 1924.
- Faber, H., *Cooperation in Danish Agriculture*, Longmans, Green & Co., New York, 1918.
- Hanson, E., "The Renaissance of Iceland," *Geographical Review*, 1928, vol. 18, pp. 41-61.
- Harvey, W. J., and Reppien, C., *Denmark and the Danes*, T. Fisher Unwin, Ltd., London, 1915.
- Howe, F. C., *Denmark, a Cooperative Commonwealth*, Harcourt, Brace & Co., New York, 1921.
- Jones, H., *Modern Denmark—Its Social, Economic and Agricultural Life*, P. S. King & Son, Ltd., London, 1927.
- Kamran, G., "Modern Iceland," *Geographic Review*, 1918, vol. 5, pp. 216-231.
- Knight, E. W., *Among the Danes*, University of North Carolina Press, Chapel Hill, 1927.

- Sorensen, H., "Iceland—Brief Economic Survey," *Trade Information Bulletin No. 541*, U. S. Department of Commerce, Washington, 1928.
- Stefansson, V., "Man in Greenland, a Review," *Geographical Review*, 1930, vol. 20, pp. 657-663.
- Thorsteinson, T., *Iceland—A Handbook*, Prentismidjan Gutenberg, Reykjavik, 1930, 2nd edition.
- Westergaard, H., *Economic Development in Denmark*, Oxford University Press, London, 1922.

## GERMANY (DEUTSCHES REICH)

SCIENCE is the tool which the active and industrious German people have used to fashion one of the most powerful and progressive nations of modern times. By the use of scientific agriculture the German farmer has turned a desolate area of sand and moor into a productive countryside. By the use of mechanical and chemical inventions and improvements the German manufacturer has constructed the mightiest industrial organization in Europe. By the use of the careful application of the physical sciences the German engineer has fashioned the *Graf Zeppelin* and those speedsters of the Atlantic, the *Bremen* and the *Europa*. Truly Germany is a product of the modern scientific age to a greater extent than any other nation, with the possible exception of the United States.

The evolution of Germany into a powerful and progressive nation has taken place during the past sixty years. Prior to that time progress was retarded by the lack of political unity. Following the break-up of the Empire of Charlemagne, the present territory of Germany gradually disintegrated into a group of small states. Forces tending toward unity were, however, gradually making themselves felt. The Hapsburgs were expanding the Bavarian mark and carving out an empire in the south-east, while the Hohenzollerns extended their sway from the mark of Brandenburg until all of the north German plain was included in the Kingdom of Prussia. The central German highland between these two large units was divided into a number of small states. An attempt to bring all of these areas together was begun in 1815, with the organization of the feeble German Confederation. A second step was taken in 1834, when some two-thirds of the states were brought together in a Zollverein or Customs Union. Real unity was retarded by the contest between Austria and Prussia for the leadership of the other states. This was settled by the defeat of Austria in 1866 and the rise of Prussia to a position of dominance. The final step was taken in 1871, when Bismarck and his colleagues organized the German Empire, which included all of the states except Austria.

Once unity had been achieved, the nation was in a position to

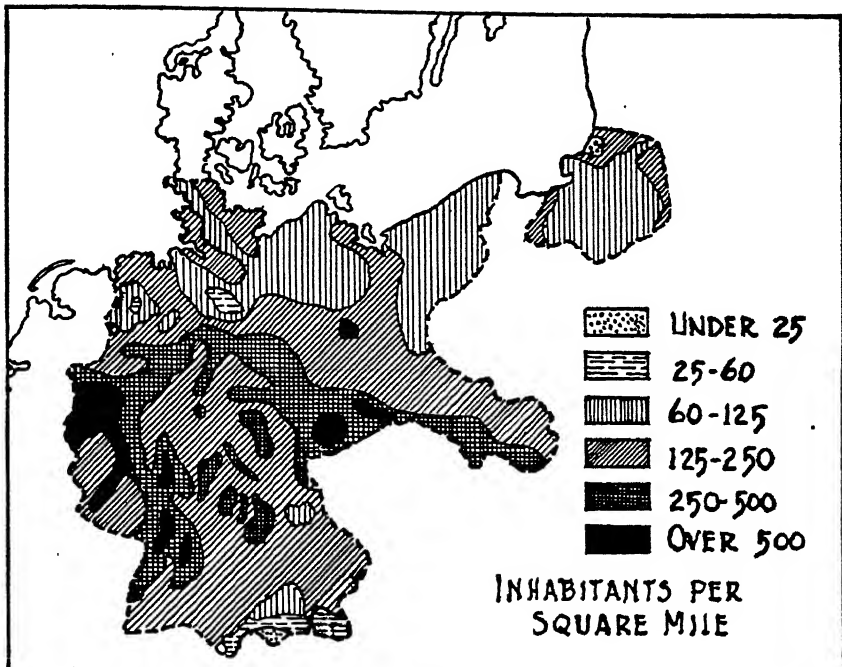
advance rapidly. The coal of the Ruhr, Saxony and Silesia, the iron ore of Lorraine, and the broad acres of the southern valleys and the north German plain provided the raw materials from which a powerful state might be fashioned. In using these resources the German people turned to their faithful tool, science. The result was an economic and political advance so rapid that it staggers the imagination. From a position of relative unimportance, Germany advanced until by 1914 it was the most powerful nation in Europe.

The World War checked this advance, and reduced, at least temporarily, the economic and political importance of the nation; but, following the signing of the peace treaties, recovery was so rapid that by 1929 Germany had largely regained its pre-war economic position. Unfortunately, within recent years new adverse factors have intervened to hamper progress. High tariff barriers have restricted trade, and a world-wide depression has reduced markets. Consequently today the economic situation faced by the nation is more serious than at any time since unification. It is, however, far from hopeless, but improvement must await European and world stabilization.

#### THE POPULATION OF GERMANY

**Numbers and Distribution.**—Varied in race, culture and tradition, yet unified by language and historical forces, the German people constitute one of the most interesting and capable groups to be found throughout the world. Due to a relatively rapid rate of increase, the total population amounts to some 64,000,000, causing the country in this respect to rank second only to Russia among the European powers. This results in a density of 354 per square mile for the country as a whole, but the distribution of population is far from uniform. The greatest concentration is to be found within the three lowland bays and within the fertile Rhineland. Thus Saxony has 863 per square mile, Westphalia 617, Upper Silesia 369, and Rhenish Prussia 766. On the other hand, portions of the highlands and the less fertile sections of the plain contain relatively few people. Such sections may be represented by East Prussia with 156 per square mile, Mecklenburg-Strelitz with 98, and Lower Bavaria with 183. The relative distribution of population has been much the same for the past few hundred years. Following the Industrial Revolution, industrialization took place in those areas of good soils which were already most densely populated. Consequently there was no shift of population centers such as accompanied the rise of the factory system in Great Britain.

An increasing proportion of the German people are crowding together in cities. Many of these cities are of large size, the country containing 49 with a population of over 100,000. Today 65 per cent



The distribution of population in Germany.

of the population is urban, and 27 per cent reside in the 49 large cities just mentioned.

TABLE 90

PERCENTAGE OF GERMAN POPULATION LIVING IN SMALL, MEDIUM-SIZED AND LARGE COMMUNITIES<sup>1</sup>

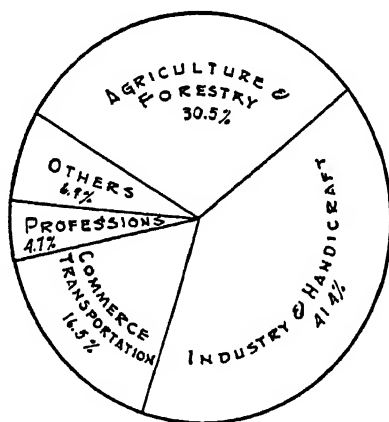
Year	Communities of less than 2000	Communities from 2000 to 100,000	Communities of more than 100,000
1875.....	60.9	32.8	6.3
1900.....	45.6	38.2	16.2
1925.....	35.6	37.6	26.8

**Character of the Population.**—More than in most European nations, the population of Germany is varied as concerns race, religion and cultural background. The resulting diversity has been an element

<sup>1</sup> Bearbeitet in Statistischen Reichsamt, *Deutsche Wirtschaftskunde*, Verlag von Reimar Hobbing, Berlin, 1930.

of strength to the state. Each group, because of its peculiar interests or capacities, has been able to make distinctive contributions which strengthen and stimulate the other groups.

Three of the major races of Europe are represented in Germany, and they have intermingled for such a long period that examples of pure racial stock are rare. The north and northwest is the land of the northern European long-heads, and this group also moved south by way of the Rhine and Weser Basins. It thus occupies many of the most densely populated agricultural and industrial regions. In the northeast the stolidness and patient industry of the peasant betray a large amount of Slavic blood, and the Slavs have moved westward



Occupations of the gainfully employed population of Germany. Percentages of total employed. (*Deutsche Wirtschaftskunde*.)

through the plain and have mixed with the original Teutonic inhabitants of this area. The modern Prussian, with his industry, ability and group pride, largely represents this combination.

The Rhineland shows the influence of frequent Latin invasions, not only in the physical characteristics of its people, but also in their vivacity, charm, and interest in education and artistic achievement. The highlands of the south are the home of the central European round-heads. These people have pushed northward, and have mixed with the other racial elements in the central part of the country. They are a kindly, friendly people, and their achievements in music, literature and science represent some of the greatest German contributions to mankind. Each section of the country thus makes its distinctive contribution to the whole, and has aided in adding variety and interest to German life.

## SITUATION AND BOUNDARIES

Prior to the World War, Germany was approximately the same size as France, but as a result of that struggle it lost 13.3 per cent of its former territory, and now has an area of 180,989 square miles, or approximately the same as the New England and Middle Atlantic states combined. The nation is divided into eighteen states, of which Prussia is by far the largest, including as it does 62 per cent of the total territory of the Republic, while Bavaria, its nearest competitor, occupies only 16 per cent. Many of the states are extremely small and are even composed of widely separated bits of territory. The size of Prussia illustrates the degree to which political unity has been attained in the north German plain, while the many small states of southern Germany reflect the physical complexity of that area.

**Boundaries.**—Toward the east natural boundaries are lacking, and the existing frontier is the result of historical forces. The advances and retreats of the Germanic and Slavic peoples have fixed this line throughout history. Prior to the World War Germany here faced Russia, and its fear of Russian aggression was the result of long and continuous resistance to Slavic advances. Today Poland and Lithuania touch Germany in this area, and the determination of the new boundary lines has given rise to some of the most serious problems facing present-day Europe. Here the Polish Corridor separates East Prussia from the rest of Germany, and contains important German minorities. The Upper Silesian border is also far from satisfactory, as it breaks up the economic unity of the area. It is in these two regions, that Germany is most anxious to readjust its frontiers.

In the southeast the Sudeten, the Riesen Gebirge, the Erz Gebirge and the Böhmer Wald separate German territory from the Czech Basin and form moderately effective barriers. In the extreme south the Rhine Valley and the Bodensee separate Germany from Switzerland, and the Alpine slopes mark the Austrian boundary. Thus effective natural barriers line the southern frontier except in the Danube Gap, which is occupied by Austria, a weak and normally a friendly power.

The western boundaries leave much to be desired from the point of view of protection. The Rhine in its Rift Valley is an ineffective barrier, and the highlands of Lorraine are pierced by numerous passes. In the European plain natural boundaries are lacking except along a section of the Dutch border, where the Aremberg and Bourtanger moors serve this purpose indifferently well.



The North Sea and the Baltic form most of the northern boundary, and their low, foggy coasts are easy to defend. The land frontier in the Jutland Peninsula is the result of historical forces, and the weakness of Denmark makes the lack of natural barriers of little importance. Germany has here expanded at the expense of Denmark.

**The Political Consequences of Situation.**—Geographical location has made the German people willing or unwilling participants in every major political movement in Europe. Occupying a central position between the Slavs of the east and the Latins of the west and south, they have of necessity been influenced by the movements and activities of each of these important groups. It was the Germanic peoples who held the eastern and northern marches against the westward flow of the Slavic tide. They also barred the northeastward advance of the Roman legions, and later bore the brunt of attacks by the Burgundians and French. With increases in population and power they have expanded at the expense of their neighbors. Three spear heads of penetration have been thrust toward the east in East Prussia, Silesia and Austria. Toward the west they have expanded in Alsace and Lorraine at the expense of the French. The present boundary lines do not represent the maximum expansion of the German peoples, for several million live in Austria, and as minority groups in such neighboring states as France, Italy, Poland and Czechoslovakia, and even in Rumania and Russia.

**Economic Consequences of Situation.**—While the central and exposed position of Germany may be a disadvantage from a political or military point of view, it is a decided advantage from an economic viewpoint. Such bordering nations as France, Switzerland, Belgium, Denmark, and The Netherlands are among the most densely populated and most productive in Europe. Consequently they constitute a tremendous market for German goods. The grains of Poland and the iron ores of France show that the neighboring states also produce surpluses which are in great demand within Germany itself. Thus there has arisen the basis for a sufficiently great trade to make Germany the most important commercial nation on the continent.

Its commercial advantages have been increased because of its location between eastern and western Europe. Germany has consequently been a transit zone through which the streams of commerce have had to flow in passing between those two areas. This trade has increased its contacts with the east and west, and has made Germany an important transshipment center.

## CLIMATE

Germany has a remarkably uniform climate, considering the fact that it covers nearly 8 degrees of latitude. Except in a few of the southern valleys, the influence of the warmer latitudes is counteracted by increases in elevation. Such variations as exist are caused more by distance from the ocean than by distance from the equator. In general, the country has a modified continental type of climate, with oceanic influences most important in the northwest and continental influences dominating toward the east.

**The German Lowlands.**—The climate of the German plain varies considerably from west to east. In the northwest it closely resembles that of The Netherlands. During the winters the mean temperature is seldom below 30 degrees Fahrenheit, with the result that the harbors are never hampered by ice and the inland waterways are obstructed only for a short period each year. Although the evenly distributed rainfall averages only some 31 inches a year, there is much dull, cloudy weather. Altogether, it is a climate favorable to man and well suited to a large number of agricultural products.

Toward the northeast the climate becomes more severe, with an average variation between mean summer and winter temperatures of 42 degrees Fahrenheit. The cold winter winds sweeping in from the east close many of the Baltic ports for considerable periods, and hamper inland water transportation from 90 to 125 days each year. The rainfall averages only 24 inches yearly, and comes mostly during the summer months. The warm summers and moderate rainfall cause the region to be well suited to such crops as wheat, rye, potatoes and sugar beets.

The lowland bays, which form the southern extensions of the plains, are warmer and have less rainfall than the more northern sections. They also vary from east to west, the Rhine Funnel having a milder climate with less seasonal variations than the Silesian Trough. Rainfall also diminishes toward the east, but in no case is it sufficiently low to hamper agriculture.

**The Southern Highlands.**—The climate of southern Germany reflects the influence of elevation and varied relief. Summer temperatures closely resemble those of the north, although the winters are more severe. Thus München (Munich) and Hamburg have approximately the same average July temperature (63 degrees Fahrenheit), but around the former city the average seasonal variations amount to

38 degrees Fahrenheit, while around the latter they are slightly less than 35 degrees. Locally the relief decidedly modifies temperature. Thus in the higher elevations, such as the Bavarian Alps and the Schwarzwald (Black Forest), the delightfully cool summers attract thousands of tourists each year, while in the same sections the very severe winters make outside employment difficult or impossible, and have led to the development of such household industries as lace making and wood carving. Relief also decidedly influences rainfall. The heaviest fall in Germany is on the slopes of the Schwarzwald, where it occasionally exceeds 80 inches a year.

**The Rhine Valley.**—The Rift Valley of the Rhine and portions of the valleys of such other rivers as the Main and the Neckar contain the vine lands of Germany. Here the shelter of protective highlands, the low elevation and southern location combine to provide a climate quite similar to that of central France. In the hot summers and mild winters the vine, corn, tobacco and many tree fruits thrive. Even the low rainfall of only 20 inches a year does not hamper cultivation. These are the garden spots of Germany. It was not by accident that one of the richest sections of this sunny wineland has been called the Palatinate—"Land of Palaces."

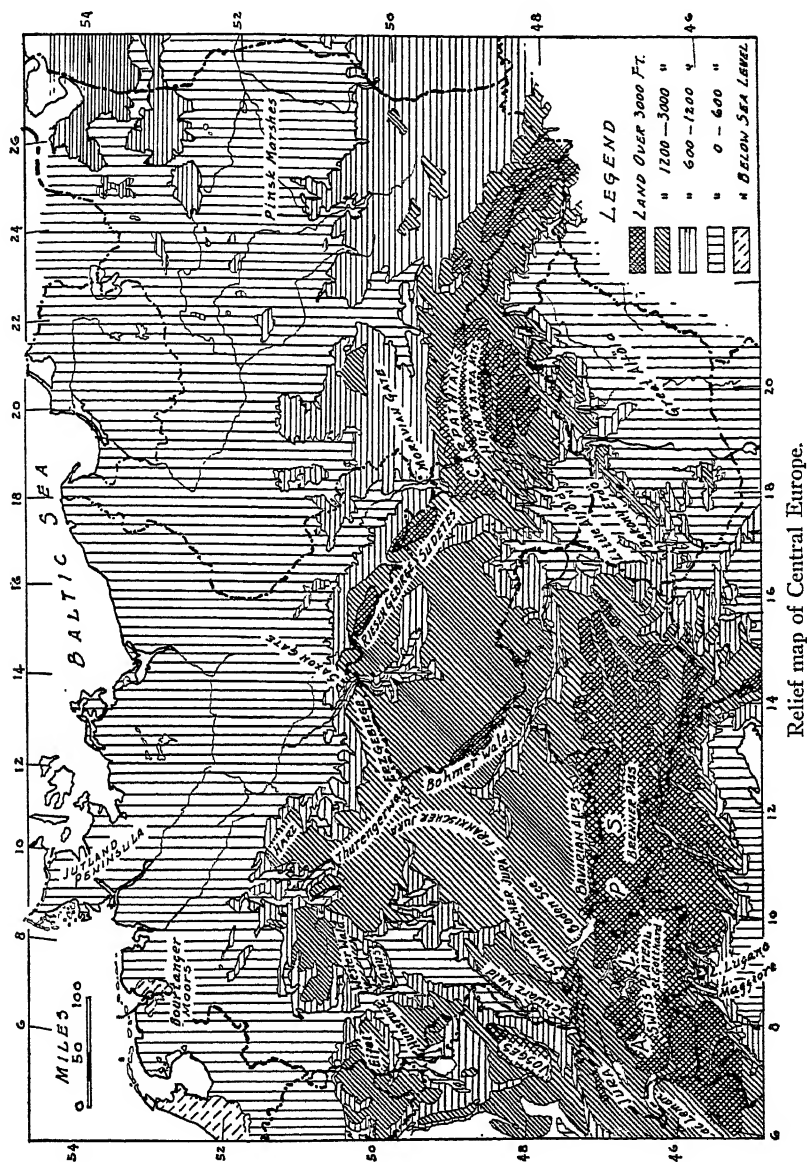
### GEOGRAPHICAL REGIONS

The monotonous expanse of the northern plain contrasts sharply with the complex highlands of central and southern Germany. From a human point of view the warm Rhineland, with its Latin influences, is distinct from both the other regions. Accordingly, for a more detailed consideration of the human geography of the country it will be divided into these three major regions, and, where necessary to give a clearer picture of the influences of local environment on man, these in turn will be subdivided.

### THE GERMAN LOWLANDS

Moor and bog on the west, sand and forest on the east—surely this region seems uninviting as a home for man, and yet it has certain advantages. Within the plain lie the most navigable sections of the German rivers, and along its northern edge lie the German ports. Also in the great lowland bays, where the erosive action of the Rhine, the Elbe and the Oder have extended the plain south into the highlands, occur fertile soils and valuable minerals. In short, it is a region where

man has had a difficult struggle to wrest a living from the environment. But once he made use of his valuable tool, science, he found it possible

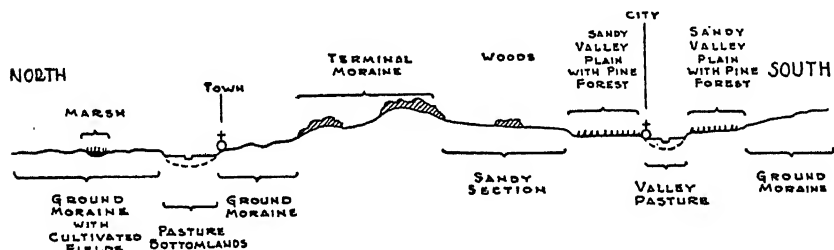


Relief map of Central Europe.

to transform these lowlands into the leading agricultural and industrial region of Germany, and one of the most productive portions of Europe.

These lowlands occupy slightly over half of the entire country. They are characterized by uniformity of relief, except where the last

glacial ice sheet has left a series of morainic ridges paralleling the Baltic from East Prussia to the Jutland Peninsula. Physical uniformity is reflected in political unity. Starting from the frontier mark of Brandenburg, the Hohenzollerns gradually extended their sway until the entire plain was included within the state of Prussia. Uniformity has also had its commercial effects. The ease with which roads and railways may be constructed over this plain has caused it to be crossed by the great east and west routes of Europe, thus adding immeasurably to the commercial importance of its cities. Even the morainic ridges do not offer any important interruptions to this uniformity. The highest and most northern one, known as the Baltic Ridge, attains a maximum elevation of approximately 1000 feet. The others are lower, and, while their forest-clad slopes stand out sharply above the surrounding plain, they offer no serious handicap to the movement of man. In fact, they



North-south cross section of the North German Plain. (After S. Passarge.)

encourage east and west transportation, because the old glacial valleys which lie between and to the south of them provide excellent paths for rail or canal routes.

While the plains are characterized by uniformity of relief, they are subject to a wide variety of surface conditions which are reflected in differences in human development. Hundreds of glacial lakes dot the surface of East Prussia and, in fact, the whole eastern portion of the plain. With their forest-clad shores, many of them are beautiful, and near the large cities are much used as recreational centers. This is a land of great estates, with the modest homes of the farmers clustering around the imposing home of the landowner, or of agricultural villages from which the farmers go daily to the surrounding fields to care for their livestock or cultivate their varied crops. Here, as in the central portion of the plain, many of the villages with their surrounding areas of cultivated land appear as islands in a surrounding sea of trees— islands which are linked by a network of roads and railways. Toward the west the character of the country changes. Lakes gradually dis-

appear, and are replaced by wide areas of swamp and bog which long retarded human occupation. The forests also disappear and are replaced by moor, which becomes the dominating element of the landscape. Here cultivation declines, and the farmer devotes most of his attention to the pasturing of livestock and especially to dairying.

The plain is also characterized by wide variations in soil conditions, much of the soil consisting of coarse sand and gravels. Even with the use of science, the industrious German farmer has been unable to use the poorer portions of these soils, and they remain forest covered. The



The Lueneburger Heath, near the Dutch border in the North German Plain. (Courtesy of the German Tourist Information Office, New York.)

better portions have been made productive by farmers who have used every aid, in the form of fertilization and cultivation, which science has to offer. In few sections of the world has man been so successful in overcoming unfavorable soil conditions as in the German plain. The large crops of rye and potatoes gathered from these areas are evidence of his success. Several areas of better soil occur, and here the farmer secures very high yields per acre. One such region extends along the southern slope of the Baltic Ridge from East Prussia to Lübeck and Schleswig. Other and even more fertile regions occupy the three tongues of lowland which extend south into the highlands along the Oder, the Elbe and the Rhine. The alluvial soils of the river valleys and occasional deposits of boulder clay constitute other and more local areas of

fertility. Where these better soils appear, the farmer usually gives preference to wheat, oats and sugar beets, although rye and potatoes are frequently rotated with the other crops.

**Distribution of Population.**—These lowlands contain the major portion of the population of Germany, although its distribution is far from uniform. The centers of greatest density are to the south, where the better soils of the river valleys and abundant minerals have led to the growth of many large towns and cities. Another fringe of cities has grown up near the coastal area, and consists of ports, many of which have been famous since the days of the Hanseatic League. More recently some of the cities of the central plain have assumed major importance. Berlin, Magdeburg and Hanover have thus advanced, largely because of their strategic location with respect to land routes. All portions of the plain have their large cities, and its importance in this respect may be seen from the fact that it contains five of the seven cities of Germany with a population of over 500,000.

**The Baltic Coast.**—Men have used the coastal area of Germany as a base for commercial activity since earliest recorded history. Of the total 1100 miles of coast line, 300 are on the North Sea and 800 on the Baltic. At one time the Baltic coast contained some of the leading ports of Europe, and the North Sea harbors were of little importance. The rising importance of the North Sea and the North Atlantic routes changed these conditions. Although it is less than half as long as the Baltic coast line, some 85 per cent of all German shipping today passes through the harbors of the North Sea coast.

The Baltic coast has certain physical disadvantages as compared with that of the North Sea. It is more shallow and the harbors are closed by ice for a considerable period each year; but as long as the Baltic was the most used European sea, men overcame these handicaps and the coast was much used. Königsberg, Stettin, Rostock, Lübeck and Kiel—one might be calling the roll of the leading Hanse towns. Once among the mightiest centers of that League which for years dominated the commerce of Europe, they have dropped back to ports of second-rate importance. The use of larger ships and the shift of the center of commerce to the North Sea brought an end to their supremacy. Today they still carry on much Baltic trade but, although they are equipped with all the modern port devices, they have been surpassed in importance by the North Sea ports.

**The North Sea Coast.**—The North Sea coast is quite different from that of the Baltic. It is low and sandy, and in many places must be protected by dikes, behind which the rich marsh lands have been

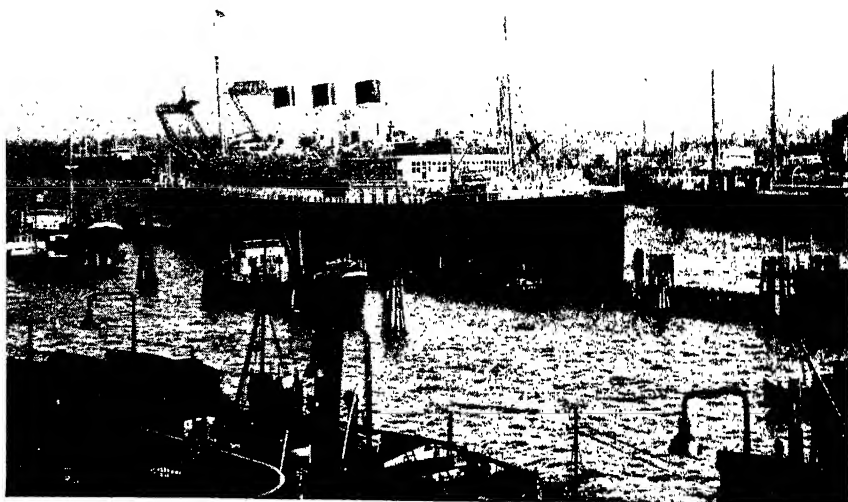
drained and turned into lush pastures where the German dairymen graze large numbers of cattle. The region is one of the leading producers of dairy products in the country, but behind this strip of productive green is a wide belt of heath and sandy moor which supports a very sparse population. The section near the coast is thus not sufficiently productive to give rise to an important trade, and consequently the leading ports are located as far inland as possible in order that they may more easily tap the rich agricultural and industrial districts of the interior.

*Hamburg.*—Hamburg, the first port of Germany and one of the great ports of Europe, is situated at the head of the estuary of the Elbe. This river has its source in the Riesen Gebirge, and drains most of the Czech Basin before breaking through the Erz Gebirge at the Saxon Gate. Its upper reaches are navigable, and Aussig is its principal Czech port, but the speed of its current causes navigation on this upper section to be largely down-stream. Below Dresden the river becomes a slow meandering stream of the plains, extensively used for navigation, although devices for regulation are necessary to maintain the channel and prevent obstructions. The transportation possibilities of its lower reaches are increased by canals connecting it with Berlin, the Oder, and numerous industrial areas. The Elbe thus taps such productive regions as the Czech Basin, the Saxon Triangle, the Silesian Trough, the Berlin district, and much of the central portion of the German plain. Even Austria and at times Hungary make use of this valley as a pathway to the sea. It accordingly gives Hamburg a large river traffic and extends its hinterland throughout much of central and eastern Germany and even far into central Europe.

Today Hamburg is a great modern city, its population of slightly over 1,000,000 placing it second to Berlin in size among the German centers. Little remains to recall the days when it was a second-rate Hanse port. Its miles of excellently equipped docks, its giant warehouses, its great office buildings and its many factories where products from overseas are manufactured, all bespeak the twentieth century. At its wharves are ships flying every flag, and in its free port may be seen goods from overseas destined for Praha (Prague), Wien (Vienna) or Budapest, or goods from these cities to be distributed to the four corners of the world. Its prosperity is evidenced by the shaded streets and the delightful homes of its residential sections. Truly Hamburg exemplifies the increasing part which modern Germany is playing in world trade. Cuxhaven, its outport, is used by some of the larger ships which fear the shallower waters of the estuary.



*Bremen.*—Bremen ranks second to Hamburg among the German ports. It is located at the head of the estuary of the Weser. Unfortunately, this stream is little used for navigation, so that Bremen lacks the advantage of the extensive river trade which has played such a prominent part in the development of its larger rival. It has the further disadvantage of having a local hinterland which is largely unproductive, but in spite of these handicaps its sea traffic nearly equals that of Hamburg. It is first among the continental ports in the handling of such products as cotton, rice and tobacco, and it distributes these



The port of Hamburg. (Courtesy of the German Tourist Information Office, New York.)

products all over Europe. Bremen resembles Hamburg, in that it has an outpost, Bremerhaven, which is used by some of the larger ships.

*Berlin.*—Berlin's population of nearly 4,500,000 places it first among the cities of the German plains and of continental Europe. Ever since 1491, when the Hohenzollerns definitely selected it as their capital, the progress of the city has been intimately related to the progress of that family and of Prussia. Following the formation of the Empire, its rise was especially rapid.

The original town doubtless owed its location to the fact that an island here made possible the bridging of the Spree, but as the local

hinterland was not especially productive, any real progress had to await the time when its people were able to construct transportation lines connecting it with more productive regions. Physical conditions were quite favorable to such construction. The city itself is located in the midst of an old glacial valley extending from Hamburg to Warszawa (Warsaw). This facilitated the construction of railways and encouraged the linking of the city with both the Oder and the Elbe by canals. Rail construction soon took place in other directions, and the city found itself at the center of a vast railway net covering all of Germany. Today no portion of the country is more than twelve hours from Berlin by rail. Through it pass the lines connecting Paris with Warszawa and Moskva (Moscow), the Scandinavian countries with Italy, and the North Sea ports with Odessa. From the point of view of land transportation, it enjoys facilities unsurpassed by any other European city.

As the city increased in size, manufacturing developed, until it became the leading industrial city of Germany. Its abundant supply of cheap labor and its skilled artisans have led it to specialize in the manufacture of clothing, machinery and scientific instruments, as well as in printing, publishing and the preparation of food products.

Berlin is a city of great government buildings, of palaces, of beautiful parks, of universities, museums and libraries, and of lofty churches. Yet none of these dominate or strike the keynote of the life of Berlin. It is business that is the heart and soul of the city. More than any other city of Europe, it resembles the leading American cities. The tempo of life is rapid, and yet the purposeful attitude of the people indicates that their activity is being directed along constructive channels. In Berlin more than in other German cities one may feel that boundless energy and ambition which have driven Germany to such great heights during the past fifty years.

**The Lowland Bays.**—The north German plain pushes its way south into the midst of the highlands in three great bays of lowlands, bordering the Rhine, the Elbe and the Oder. These three bays are known respectively as the Rhine Funnel, the Saxony Triangle and the Silesian Trough. As they contain more fertile soils than the rest of the plain, they have always had the most dense agricultural populations. The presence of coal and the existence of other minerals in the bordering highlands also made them favored sites for manufacturing centers following the Industrial Revolution.

*The Rhine Funnel.*—The Rhine Funnel extends from the Dutch border south to Köln, and in the Ruhr district contains the greatest

industrial region of Germany or of the continent. This industrial activity is based upon an unusually favorable combination of physical conditions. Between the Lippe and the Ruhr occur the most extensive beds of excellent coking coal to be found in Europe. Here 175 mines produce between 100,000,000 and 120,000,000 tons of coal annually. Hundreds of coke ovens turn this coal into a form available for the iron and steel industry, and extract by-products which form the basis of important chemical industries. Near at hand in the Siegerland district are the most valuable iron ore deposits in Germany, and rail and water routes connect the Ruhr with the ore of Lorraine. The Rhine also serves as an excellent avenue for the importation of ore from Sweden and other more distant points. The Ruhr district is located at the junction of some of the most important natural transportation routes in Europe. The Rhine Valley provides rail and water communication with central Europe and the sea. Crossing this is the great east and west route which follows the edge of the central highlands. Locally a most complete system of railways and canals links together the various portions of the section and connects them with the outside areas. The dense population of the region provides an abundant supply of skilled labor which makes excellent use of the favorable environmental factors.

Around the mines and factories have grown up great industrial centers, until the whole area seems to be one urban unit. Fourteen cities, each with a population of over 100,000, sprawl across the landscape and occasionally crowd so close together that boundary lines are arbitrary. Mine shafts, great piles of waste, blast furnaces, steel mills, coke ovens, chemical plants and rows of workers' apartments are jumbled together and bathed with the smoke of thousands of towering smokestacks. It is not a beautiful region, but one where Industry is king and Science is his prime minister.

Essen, Bochum, Dortmund, Duisburg and a dozen other notable industrial cities differ only in size and in the products in which they specialize. Iron and steel are produced in all sections, but are especially important in such eastern cities as Dortmund and Bochum. Here the greatest coal mines furnish abundant fuel for blast furnaces, steel mills and plants turning out finished products. In the more western cities, such as Duisburg and Hamborn, the manufacture of chemicals competes with the iron and steel industry in importance. Many of the cities also make use of the labor of women and children in turning out considerable amounts of cotton and woolen textiles. At the junction of the Ruhr and the Rhine stands Duisburg-Ruhrort, a major industrial

city and the greatest river port in the world, having a traffic of between 20,000,000 and 30,000,000 tons annually.

So important are the industries of the Funnel that one is prone to neglect its agriculture; but for hundreds of years before the first coal mine was sunk or the first factory constructed the hardy peasants of this region were raising large quantities of wheat, rye, oats and numerous other crops. More recently sugar beets have become important, and, with the rise of the industrial centers, market gardening has grown rapidly. Near many of the workers' villages are acres of gardens where each family may raise vegetables and flowers.

Köln.—Near the southern end of the Funnel stands Köln, one of the oldest and most important cities of the Rhine Valley. It was first a Roman town, but its favorable location early made it an important commercial center. It commands the north and south Rhine traffic and the east and west routes which skirt the southern highlands. Access to coal and imported raw materials has also made it an important industrial center, turning out such products as textiles, chemicals, glass, perfumes and chocolate; but it is vastly different from the newer industrial centers of the Ruhr. It has a feeling of age, dignity and cohesion lacking in the latter cities. Its Roman traditions, its magnificent cathedral and other old and beautiful buildings, and its excellent educational institutions denote an interest in cultural attainments which adds to its attractiveness.

*The Saxony Triangle.*—The Saxony Triangle contains the second most important industrial district in Germany. The metallic ores of the Erz Gebirge, the salt of Halle, and the timber of the neighboring highlands provide abundant raw materials, while fields of coal and lignite and abundant water power provide the power resources necessary to turn these raw materials into finished products. The active population of the region applied science to the use of these resources, and developed a great manufacturing industry. The junction of the trade routes connecting Thuringia with Poland and northern Germany with Bohemia also gave this region commercial advantages which the Saxons were quick to exploit. The amount of level land is not as great as in the Rhine Funnel, but the fertility of the soil is greater, and the industrious Saxon farmers produce large crops of wheat and sugar beets on the plains and fruit on the slopes. These various activities have attracted to this section a very dense population. Thus Saxony has today a population density of 863 per square mile, which places it among the most densely populated regions of Europe.

The exhaustion of the silver, nickel, iron, tin and other metals of

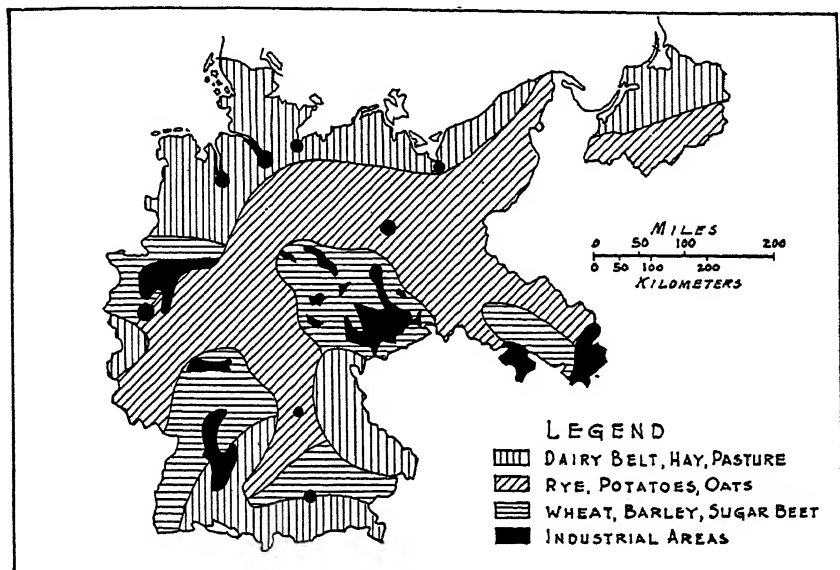
the surrounding highlands has changed the character of the industries of Saxony, and such metal industries as exist at present depend upon imported raw materials. This section has recently become the center of the German automobile industry, and it is noted for the manufacture of scientific instruments, watches and other fine metal products. The declining supply of local metals caused the Saxons to give increasing attention to textile manufacturing, which had started as a household activity. In the more moist western section, cotton textiles assumed major importance, and today great mills are found in and around Chemnitz and Zwickau. In the drier east, wool replaces cotton as the dominant textile. The forests of the surrounding highland also enabled the capable population to produce large amounts of pulp and paper. The Elbe carries these goods to the North Sea for distribution to all corners of the world, and an excellent system of railways leads to the markets of Germany and of neighboring countries.

Dresden.—Dresden, the capital of Saxony, is situated on both banks of the Elbe, and its fame as an art and music center causes it to be known as the "German Florence." It is one of the most beautiful and interesting cities of Germany, with its magnificent buildings and its world-famous galleries and museums. Its artistic fame attracts thousands of tourists each year, and thus adds materially to its economic well-being. Even its industries reflect its artistic qualities, for local deposits of kaolin clay enable it to produce porcelain and china which enjoy a world-wide reputation. Its expert workmen also produce a variety of specialty products.

Leipzig.—Leipzig is a bustling modern city, and has long been one of the greatest commercial centers of central Germany. It has become one of the greatest rail centers, and has excellent contacts with Poland and Bohemia. The fame of the Leipzig fairs has been closely related to its strategic position. These fairs have been held yearly since the fifteenth century, and are today the largest in the world. From an industrial point of view, the city is especially noted as the leading printing and publishing center of Germany. It has also long been one of the world's leading fur and leather markets, and these products serve as the raw materials for numerous industries. The production of chemicals and textiles is of considerable importance. These activities have attracted to Leipzig a sufficient population to make it the largest city in Saxony and the fifth largest in Germany.

*The Silesian Trough.*—The Silesian Trough is another area of prosperous farms and great industries. Prior to the World War, Silesia was the largest province of Prussia, and one of the most pro-

ductive. The peace treaties divided this territory, a small section going to Czechoslovakia and a larger area to Poland. The economic unity of the region has thus been disrupted by national barriers, and the new boundaries do not conform entirely with the desires of the population as expressed in the plebiscite by which the dividing lines were supposed to have been fixed. As a consequence, much dissatisfaction exists, and agitation for a revision of these boundaries is continuous.



The agricultural and industrial regions of Germany. (From "Agricultural Conditions and Regions in Germany," by Heinrich Niehaus, courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

The region is rich in mineral wealth, and the Germans used this as the basis for the construction of a great metallurgical center. It contains large amounts of coal, lead and zinc, and smaller amounts of iron ore and silver. Before the World War these minerals were actively exploited and made it possible for this area to become the leading lead and zinc smelting center of Germany and to rank second to the Ruhr in steel production. However, as a result of the peace treaties, Germany lost nearly all of the lead, zinc, iron and silver, as well as 77 per cent of the coal; but it retained such great manufacturing centers as Breslau, Beuthen and Gleiwitz. The industries of these cities were cut off from their normal sources of raw materials and from their markets, and, as a result, the industrial prosperity of the area declined for a period. Although it has recently advanced, it has done so in the face of terrific

handicaps. While the metallurgical industries dominate the life of the region, local sands have made possible the rise of an important glass industry, and in the edge of the Sudeten coal, water power and local supplies of flax and wool have been responsible for the growth of textile manufacturing.

The industrial activity of Silesia has been aided by its contacts with other sections of Germany, Poland and Czechoslovakia. The Oder is navigable as far as Ratibor, but is handicapped by low water in summer and ice in winter, and by the fact that it flows into the Baltic. Accordingly, most of the coal, iron and steel and timber sent down the river leaves it at Frankfurt-am-Oder, and passes overland to the Elbe or directly to Hamburg. Breslau is the leading city of the Trough, for the same reasons that have made Leipzig the principal city of Saxony. It is located at the junction of east and west and north and south trade routes, thus having excellent communication in all directions. This has made it the commercial center of the region. Its importance is, however, increased by its many factories which turn out iron and steel, lead, zinc, glass and timber products.

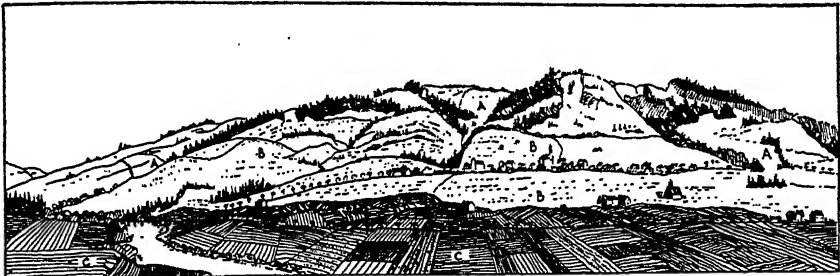
The Silesian Trough resembles the Saxon Triangle in the fertility of its soil. It enjoys the additional advantage of being one of the most level portions of the German plain. Consequently it is not surprising that the German and Polish farmers early transformed it into a highly productive agricultural region. Around Breslau and in the southern and central portions of the plain, the land is intensively cultivated, the green fields being interrupted by numerous little agricultural villages. This is one of the most important sections of Germany in the raising of sugar beets, and, in addition, wheat, oats, rye and hops are produced in considerable quantities. The favorable environment has led to a dense agricultural population which decreases toward the north with the declining fertility of the soil.

#### THE GERMAN HIGHLANDS

The southern margin of the German plain is bounded by a series of highlands extending from the Ardennes to the Oder. These include the Eifel, the Wester Wald, the Thüringerwald, the Erz Gebirge, the Riesen Gebirge and the Sudeten. The minerals of these highlands and the coal fields which border their northern edge have made possible the industrial development of the lowland bays. This chain of mountains is the dividing line between two Germanys. To the north the mixed population and commercial activity of the plain bear evidence

to its levelness and to the fact that it is open to contacts with neighboring areas. Here, also, uniformity of relief is reflected in political uniformity. To the south a complex series of mountains, valleys and plateaus interrupt commercial and cultural contacts, and lead to a lack of political unity.

**The Danube Lowlands.**—The German portion of the Danube Valley is the largest of the southern basins. Although surrounded by highland barriers, numerous gaps prevent isolation. The Alps to the south and Böhmer Wald to the northeast are the highest and most effective barriers, while the Schwäbischer and Fränkischer Jura are lower and permit easy contacts with the basins of the Main and the Neckar. The gap toward the west by way of the Boden See (Lake Constance) and Basel, and the one toward the east along the Danube



TYPICAL LANDSCAPE IN THE BAVARIAN ALPS  
A- PASTURE WITH ROCKS AND OCCASIONAL WOODS B- CULTIVATED PASTURE  
C FIELDS AND MEADOW LANDS

A typical landscape in the Bavarian Alps. (After S. Passarge.)

Valley, have caused the basin to be crossed by the routes connecting northwestern and southeastern Europe. The Brenner Pass provides communication with Italy, and the valley of the Naab leads toward the Saxon cities and Berlin.

Geographical conditions within the basin are far from uniform. Toward the south the Alpine foreland is largely composed of coarse, morainic material poorly suited for crops. Only in the river valleys is the soil fertile, and throughout most of the delightful rolling country the importance of forests is reflected in such industries as wood carving, and in the large number of frame buildings to be seen. Such cultivation as does occur is concerned with the raising of barley, oats and tame hay, but the Bavarian farmer is usually more interested in the pasturing of livestock and in dairying than in cultivation. Toward the north of the foreland the morainic gravels become thin, and swamps occur.



*München.*—Between these swamps and the forests and grazing lands to the south lies München, the leading city of the south and the third largest city of Germany. Situated where the route from Paris to Wien crosses that from Berlin to Roma (Rome), it is a most important commercial center, and, despite the lack of local raw materials and coal, it is a leading manufacturing city. Water power partially compensates for the lack of coal, and timber and grain provide a portion of the raw materials used. München is the greatest brewing center of Germany, and is important in the production of chemicals and machinery. It is also a noted center of art and music. Its beauty is not, however, confined to its galleries and operas. Old and beautiful buildings are numerous, and the city seems pervaded with a spirit of dignity and charm in sharp contrast to many of the more modern cities of the northern plain.

To the north of the Alpine foreland lies the fertile, alluvial plain of the Danube. This section presents a delightful panorama of cultivated fields, meadows and occasional forested ridges. Here the tile houses indicate a scarcity of timber and an abundance of clay. In the cultivated fields wheat and hops vie with barley and oats for the leading position, and the presence of numerous cattle denotes a well rounded agriculture.

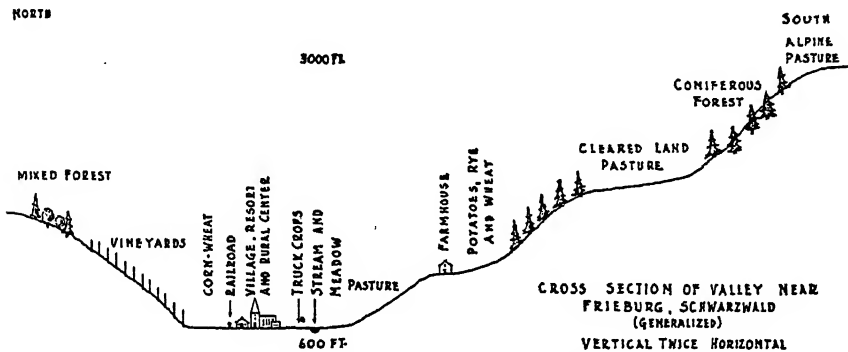
Among the many towns of the valley, two stand out as especially interesting and important. The picturesque old cathedral town of Ulm is situated at the head of Danube navigation and at the beginning of the most convenient route into the Neckar Basin. Regensburg, the former residence of the Dukes of Bavaria, stands at the most northern point reached by the Danube. Its present importance is largely due to its rail contacts with the Main Valley and with the north by way of the Naab and the Upper Palatinate.

Wooded slopes, gravel flats and alluvial valleys—such a sequence of land forms makes up the Danube Basin. Forestry, grazing and cultivation present a like sequence of land uses. Binding these different areas together are the roads and railroads following the valleys of the southern tributaries of the Danube. Thus a certain unity has been achieved which is reflected in political unity as represented by the state of Bavaria.

**The Mountains of Germany.**—Carefully tended forests, valuable minerals, delightful scenery, artistic household industries, and active, liberty-loving populations constitute some of the more important contributions of the German mountains. While some of these are characteristic of all the highland areas, others are local in their influence and

contribute that individuality which is one of the most charming and interesting features of the mountain regions.

In the extreme south the Bavarian Alps rise to an elevation of nearly 10,000 feet, and contain some of the most attractive mountain scenery in Europe. The deep blue of the highland lakes, the dark green of the forested slopes, and the light green of the upland pastures create an ideal background for the kindly Bavarians in their picturesque costumes. It is not surprising that this region is beginning to rival Switzerland as a resort center. The operation of hotels and other tourist industries is a growing occupation, but most of the population is engaged in pastoral pursuits and in lumbering. Cattle are grazed on the high Alpine pastures in the summer and taken to the villages of



Cross section of a valley in the Schwarzwald. (Courtesy of O. Starkey.)

the lower valleys for the winter, while during the summer the gathering of hay absorbs the attention of men, women and children. Some cultivation of hardy crops is carried on in the valleys, but the short growing season and thin soil limit opportunities in this direction. The influence of the long, cold winters is evidenced in such home industries as wood carving and lace making.

The name Black Forest, or Schwarzwald, is descriptive of the mountains bordering the upper Rhine Valley. Somber evergreens blanket the slopes and dominate the landscape, but even here the valleys are cultivated, and such hardy crops as rye, barley and potatoes are produced in considerable quantities. Home industries again add to the family income, wood carving and clock making being of special importance. Somewhat similar conditions exist in the Thüringer Wald (Thuringian Forest), but here the presence of quartz sand has led to the growth of the glass industry, while the clays of the eastern slopes have encouraged the manufacture of porcelain and other types of pot-

tery. Here also the evolution of the toy industry is typical of the changes which have taken place in many German mountain areas. The toys were originally hand carved in the homes from domestic woods during the winters, but as the demand for them increased, outside raw materials were brought in and the workers were gathered together in



A valley in the Schwarzwald. (Courtesy of the German Tourist Information Office, New York.)

factories. Although some toys are still produced in the homes, the industry has expanded and factory production predominates.

The presence of a variety of minerals has attracted to the Harz Mountains and the Erz Gebirge (Ore Mountains) a more dense population than is characteristic of most of the German highlands. Within the former are to be found silver, lead and iron. The name of the

latter region, Ore Mountains, indicates their importance as mineral producers. The silver and tin mines of this area have been worked for hundreds of years, and although the metallic wealth is largely exhausted, many of the industries to which it has given rise remain. Industrially, both areas profit by their proximity to the Saxon coal fields. Such other mountains as the Schwarzwald and the Thüringer Wald possess mineral wealth, but its influence upon man has been less than in the Harz and the Erz Gebirge.

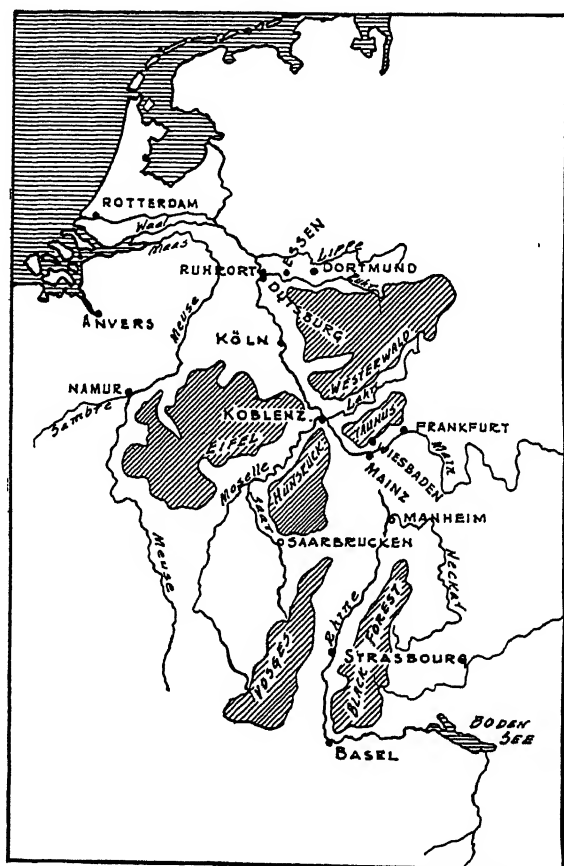
#### THE RHINE VALLEY

Historical interest, unusual beauty, productive lands, valuable minerals, mighty industries and fair cities—all are to be found in the Rhineland. It is little wonder that this is regarded as one of the most interesting and productive portions of Germany.

**The Rift Valley.**—Shut in by the Vosges and the Schwarzwald, the Rift Valley of the Rhine is justly called “the garden of Germany,” and is one of the most delightful sections of Europe. From their pine-clad summits the mountains drop in a series of gentle terraces to valley floors which are covered with prosperous farms, rich orchards and picturesque old towns. The highlands and the plain are united by a band of vineyards and pastures which occupy the terraces and the lower slopes. Present differences in the development of the two sides of the valley are largely the results of physical variations. The left bank has large deposits of potash and is better adapted to grain than is the German slope. However, the protected southern location, with light rainfall and the fertile soils, has made both sides prosperous agricultural areas. The only sections unsuitable for cultivation are the swamps which border the river. The picturesque little agricultural towns crowd close together, and from them the farmer and his wife go out to cultivate fields of hops, tobacco and wheat, or to work in their orchards and vineyards.

Not only is the agricultural population dense, but numerous cities aid in making the valley one of the most densely populated sections of Germany. Karlsruhe, the capital of Baden, is located where railroads could be built to pass around the northern end of the Schwarzwald and provide communication with the southern portion of the Neckar Valley. Mannheim, with the adjoining coal port of Rhienau, lies at the mouth of the Neckar, and is one of the most important distributing points in the valley. It also marks the head of Rhine navigation during the dry season, its traffic of 6,000,000 tons yearly surpassing that of its left-

bank rival, Strasbourg. Ludwigshafen, on the German left bank, is an important Rhine port, and is the center of a prosperous agricultural region producing wine, wheat and tobacco. Proximity to the potash deposits of Alsace has aided it in developing a considerable chemical industry. Mainz, at the mouth of the Main, guards the northern end of



The Rhine Basin. (After D. H. Smith, modified.)

the Rift Valley, and is thus strategically important. However, its larger neighbor, Frankfurt, overshadows it industrially and commercially.

**The Neckar Basin.**—Opening into the Rift Valley are two tributary basins which are intimately related to the Rhineland, both historically and economically.

To the south is the basin of the Neckar, whose fertile terraces and genial climate make it well adapted for agriculture. It is a land of rolling meadows, rich fields of wheat and hops, orchards and vineyards.

The ridge tops and surrounding highlands are mantled with a dark green cloak of conifers. The charming picture is completed by the numerous clean red-roofed towns which line the stream banks.

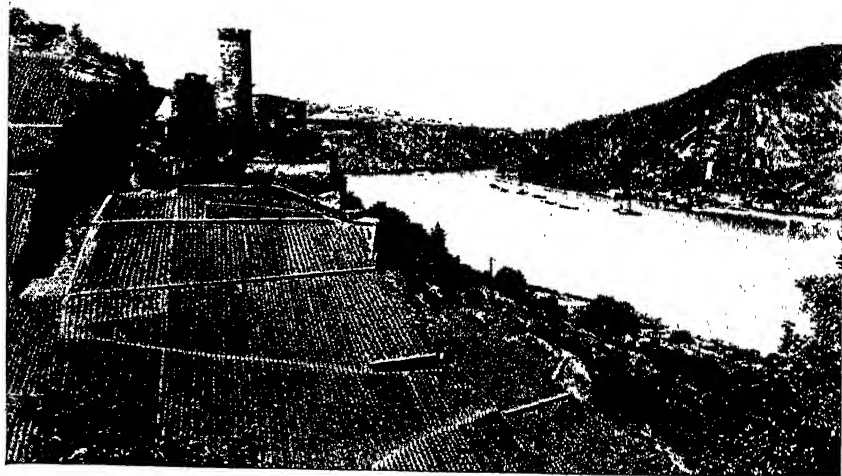
Outside influences have entered the basin from both the east and the west. By way of the Rhine came cultural and economic contacts with the west, north and south. The miles of Roman roads and the Roman names of numerous towns suggest that civilization came early from Roman centers along the Rhine. Toward the east contacts with Bavaria and the Danube Basin were easy, and an important trade route has long existed between Ulm on the Danube and Stuttgart on the Neckar. The little Kingdom of Württemberg occupies much of the valley, and the fact that it has expanded across the Schwäbischer Jura, rather than to the west, indicates that these mountains formed less effective barriers to political advance than did the historic obstacles of the Rhine Valley.

**The Valley of the Main.**—In many ways, life in the Main Valley resembles that of the Neckar. Wheat is again important, while apples are extensively raised and large areas are devoted to pasturage. The basin is far from level, and the wooded slopes overlooking the cultivated valleys present a most charming picture. Its attractiveness is increased by the numerous little villages which dot the countryside.

*Frankfurt.*—A sizeable city is to be found at both the eastern and the western ends of the valley. Of these, Frankfurt, which guards the gateway to the Rhine, is the most important. Through it came the civilizing influences introduced by the Romans and the French. Its early importance was in part due to its location at the junction of the trade routes connecting the Upper Rhine with northern Germany, and the Rhine with the Danube. Other routes were soon opened in all directions, and Frankfurt became a political, financial and commercial center of first importance. It was the chief city of the Holy Roman Empire, and here the emperors were elected and crowned. It was also a center of German culture, being the birthplace of Goethe and the home of Schopenhauer. Its financial importance can be traced largely to the activities of another native family, the Rothschilds. Today it is a leading commercial and industrial center. The deepening of the channel of the Main has made it in reality a Rhine port, and it is a distributing center for much of northwestern and central Germany. Although supporting a variety of industries, it is especially noted as a great chemical center. The architecture of the city is a delightful blending of the old and new. The Old Town, with its narrow streets and projecting houses,

retains the look of the twelfth century, while the newer sections have the most modern of buildings.

*Nürnberg.*—Nürnberg, in the eastern portion of the Main Valley, controls the routes to the Danube. The city dates back to the eleventh century, and was the most famous industrial center in Germany during the Middle Ages. Today its proximity to the timber of the highlands has aided in making it the "capital of the toy world," and important in the production of paper and cellulose products. The surrounding fields of hops and grain have made it an important brewing center, and a considerable amount of textile manufacturing is also carried on.



Vineyards, ruined castles and a swiftly flowing river characterize the Rhine Gorge.  
(Courtesy of the German Tourist Information Office, New York.)

Its excellent connection with Augsburg and Regensburg (Ratisbon) on the south and with Frankfurt and Leipzig on the north has made it a leading commercial center. Here the ancient buildings and Gothic churches preserve the flavor of the Middle Ages to a greater extent than in most other cities of Germany.

*The Rhine Gorge.*—Between Bingen and Bonn the Rhine cuts a deep gorge between those portions of the Rhine plateau represented by the Hunsruck and the Eifel on the west and the Taunus and the Wester Wald on the east. Here man and nature have conspired to fashion one of the most delightful portions of the whole valley. Forest-capped slopes, grim castled monuments of a feudal age, walled towns, and

vine-covered terraces border a mighty river which is forever writhing and twisting in an effort to find its way to the sea. It is not surprising that this is a region long famed in song and story.

Near its center the gorge widens and is joined by the Mosel and the Lahn. The cross communication thus provided has made this a point of strategic and commercial importance since the Roman days. The valley of the Mosel separates the Eifel and the Hunsrück and leads to Luxembourg, the Saar Basin and, by way of Metz and Verdun, to the Paris Basin. The Lahn has cut a valley between the Taunus and the Westerwald, and through this opening pass rail lines connecting with the upper basin of the Weser. The convergence of these routes upon the Rhine have made Koblenz (Coblenz, "The Confluence") an important commercial center, and have caused it to grow from a small Roman settlement to an imposing modern city.

The ancient university city of Bonn marks the northern end of the gorge. However, Köln is the predominant city of this region, and marks the point where the Rhine leaves the highlands to meander its way through the plain to the sea.

**The Rhine.**—The Rhine has served as a mighty bond binding together the various portions of its valley. Since prehistoric times man has used it as an avenue of migration and trade to such an extent that there has arisen a community of interest which has transcended differences in physical surroundings. The river has thus played an important part in enabling the people of its valley to achieve cultural and economic unity.

For centuries the Rhine has been the most important waterway of Europe. Long before civilization spread to the north, the Celtic and Teutonic tribes used it as an avenue of advance and retreat. It marked the Roman frontier, and the Roman legions and traders followed its valley from the Bodensee to the delta. From being the Roman frontier, the valley became the frontier between the Latins of the west and the Teutonic peoples of the east. France came to regard it as its natural and historic eastern boundary, while the Germans pushing westward made it theirs ethnically and regarded it as theirs politically. Thus since Charlemagne established his capital at Aachen (Aix-la-Chapelle) the political complexion of the valley has varied in accordance with the changing fortunes of the peoples to the east and west. Regardless of political conflicts, however, the valley has been occupied by dense and productive populations who have made intensive use of the waterway.

*Physical Characteristics.*—Nature has aided in making the Rhine navigable by causing the variations in the river level to be slight. This



is in part due to the different sources from which its waters are drawn. The Upper Rhine is fed mostly from the snow and glaciers of the Alps, which contribute the most water during the late spring and summer months, and the service of the Bodensee as a storage reservoir aids in equalizing the flow in this section. In the central and lower portions of the valley winter rains on the neighboring hills make the greatest contribution. Thus water is added at all seasons; and even in the autumn, during the period of lowest water, navigation is not usually interrupted below Mannheim. Ice does not seriously interfere with navigation except during unusually cold winters. Floating ice hampers traffic on an average of twenty days each year, but during severe winters this may be of greater duration.

The speed of the current offers no handicap below Mannheim except in sections of the Rhine Gorge, but sand bars, shifting channels and meanders in the plain offer local handicaps to shipping. Nature has thus provided the Rhine with many advantages from the point of view of navigation, but man has had to supplement these with numerous devices for regulation and control before the river could attain its present importance.

The use of the Rhine is increased by the numerous tributaries which are also navigable. The Ill, the Mosel, the Neckar, the Main, the Ruhr and the Lippe are all navigable for varying distances, and all make important contributions to the Rhine traffic. The same function is performed by the canals which connect the Rhine with the Marne, the Rhône and the coal fields of the Ruhr.

*Rhine Traffic.*—It is difficult for one not familiar with the river to appreciate the extent to which it is used. Over 7000 barges with a total capacity of more than 6,000,000 tons are constantly passing up and down the channel. In addition, there are tugs, passenger craft, log rafts, and small ocean vessels. Altogether these boats move more than 100,000,000 tons of freight on the river each year. The industrial activity of the Ruhr and the character of the river itself cause the lower section between Duisburg and Rotterdam to be most used.

The type of goods carried on the Rhine is partially responsible for the fact that more freight moves up the river than down. There are three great streams of goods which make up most of the Rhine tonnage. The first is made up of Ruhr coal, which starts at Duisburg-Ruhrort and divides, part going toward the sea and part moving up stream to the various industrial centers. The second consists of iron ore, most of which moves from Rotterdam up stream to Duisburg,

TABLE 91  
TRAFFIC OF THE PRINCIPAL RHINE PORTS,  
1929<sup>1</sup>

Port	Tonnage
Strasbourg.....	4,773,000
Karlsruhe.....	2,321,000
Mannheim-Rheinau.....	5,835,000
Ludwigshafen.....	4,002,000
Mainz.....	1,529,000
Wieseling.....	2,432,000
Köln.....	2,418,000
Düsseldorf.....	2,901,000
Rheinhausen.....	2,500,000
Duisburg-Ruhrort.....	22,303,000
Ruhrort-Meiderich.....	1,073,000
Rotterdam.....	35,000,000
Anvers.....	24,326,000

but a smaller tonnage of Lorraine ores moves down stream from Strasbourg. The third main stream consists of cereals, and starts from Rotterdam and Anvers and is absorbed little by little as it moves up stream. Petroleum and wood provide minor up-stream currents, while potash, building materials and some timber move in the opposite direction.

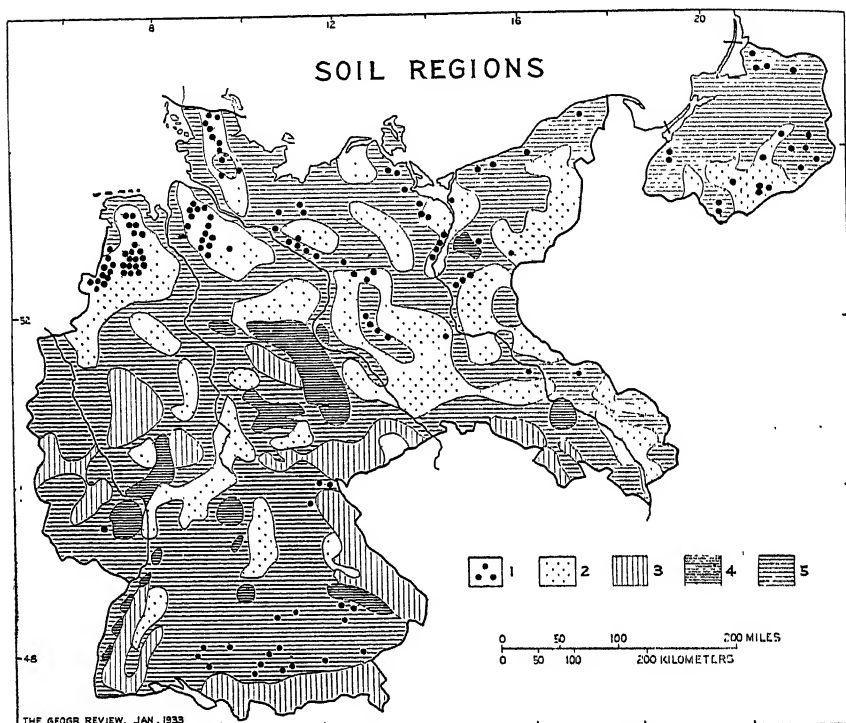
Today the Rhine is regarded as an international river, due to the essential part it plays in the life of the bordering countries. Its international character is also shown by the composition of the Rhine fleet. At present this is 45 per cent German, 35 per cent Dutch, 12 per cent Belgian, and the remainder French and Swiss. The Germans hold a predominant position in the fleet personnel, as they man not only their own boats but those of the French, and are represented on the boats of the other powers.

#### AGRICULTURE

In no phase of economic activity have the Germans made more effective use of science than in agriculture. During the past fifty years it has been an established policy to render the nation independent, as far as possible, of outside sources of food. This involved many serious problems. Most of the level land of the country occurred in the north German plain, where the light, acid soils and the cool, moist summers were unfavorable for many crops. Only in the lowland bays and within the Rhineland were natural conditions favorable, and these areas were inadequate to supply more than a small fraction of the food needed.

<sup>1</sup> Rouche, J., "La Navigation du Rhin," *Bulletin de la Société d'Encour pour l'Industrie Nationale*, July, August and September, 1930.

Accordingly the Germans turned to science and to that efficiency of organization for which they have been so justly noted. The use of artificial fertilizers was increased enormously. Local deposits of potash provided one much needed element, while the German scientists turned their attention to methods of providing synthetic nitrates and super-



The soil regions of Germany. Key: 1, moor soils; 2, sandy soils; 3, mountain soils; 4, steppe soils (black and brown soils); 5, mixed types ranging from sandy loams to clay. (From "Agricultural Conditions and Regions in Germany," by Heinrich Niehaus, courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

phosphates. The number of animals was increased, so that the amount of natural fertilizer available increased rapidly. Scientific cultivation, seed selection and crop rotation were introduced. The German manufacturers also turned out large amounts of agricultural machinery suited to the needs of the country. Through the use of these various improvements the German farmer increased his yields rapidly. So successful did they prove that prior to the World War agricultural production was increasing at a more rapid rate than population, and was able to supply approximately 75 per cent of the country's food requirements.

TABLE 92  
USE OF LAND IN GERMANY<sup>1</sup>

Use	Percentage of Total Area
Cultivated.....	46.0
Grazing lands.....	17.0
Forested.....	27.0
Uncultivated.....	4.0
Other.....	4.3
Water.....	1.7
Total.....	100.0

**Types of Agriculture.**—The types of farming vary with natural conditions in different sections of the country. In the rugged areas of the south the small farm dominates, and over two-thirds of the area used for agriculture is in farms of less than 45 acres. This is the region of homestead farming, and of the family-owned farm which is handed down from father to son. Thus in Bavaria 94.5 per cent of all the agricultural land is owned and worked by the farmer, and two-thirds of all the farms are homesteads. On these farms there is much hand cultivation, and oxen are still used extensively as beasts of burden. In the densely settled areas of the Rhineland the farms are again small, but the farmers usually live in small villages from which they go out to till their fields. Cultivation is intensive, and hand agriculture dominates.

On the other hand, in the north German plain the farms are larger, over 60 per cent of the agricultural area being in farms of over 45 acres and about 30 per cent in farms of over 247 acres. Here cultivation is much more extensive, and large amounts of agricultural machinery are used. The type of agricultural community varies in different sections of the north. In the northeast the cottages of the peasants are frequently grouped around the home of the large landowner, while in other sections the farmers live together in villages, and in still others separate homesteads exist on each farm. In all portions of the country, however, scientific agriculture prevails, resulting in high yields per acre and making Germany the leading agricultural nation of western Europe.

**Rye and Potatoes.**—The light, acid soils and cool, moist summers of the north German plain proved especially well adapted for rye and potatoes, so that these two products have become the principal items of diet for the mass of the German people. Their importance may also

<sup>1</sup> Bearbeitet im Statistischen Reichsamt, *Deutsche Wirtschaftskunde*, Verlag von Reimar Hobbing, Berlin, 1930.

be seen from the first that rye occupies 23 per cent and potatoes some 13.5 per cent of the total cultivated acreage of the country.

TABLE 93  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS IN GERMANY  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)			Production (thousands of units, bushels, except as indicated)		
	1913 <sup>a</sup>	1926-1930	1930	1913 <sup>a</sup>	1926-1930	1930
Rye.....	12,995	11,615	11,640	398,874	296,017	302,311
Oats.....	9,698	8,634	8,500	593,773	450,648	389,666
Wheat.....	4,143	4,181	4,401	148,555	123,965	139,220
Barley.....	3,413	3,729	3,754	113,106	134,408	131,362
Potatoes.....	6,924	6,942	6,928	1,617,386	1,440,130	1,730,600
Sugar beets....	1,153	1,102	1,193	13,986 <sup>b</sup>	11,674 <sup>b</sup>	14,919 <sup>b</sup>
Fodder beets..	.....	1,787	1,824	.....	24,943 <sup>b</sup>	30,402 <sup>b</sup>
Hay.....	17,773	18,709	18,705	36,843 <sup>b</sup>	33,469 <sup>b</sup>	36,988 <sup>b</sup>

<sup>a</sup> Present boundaries.

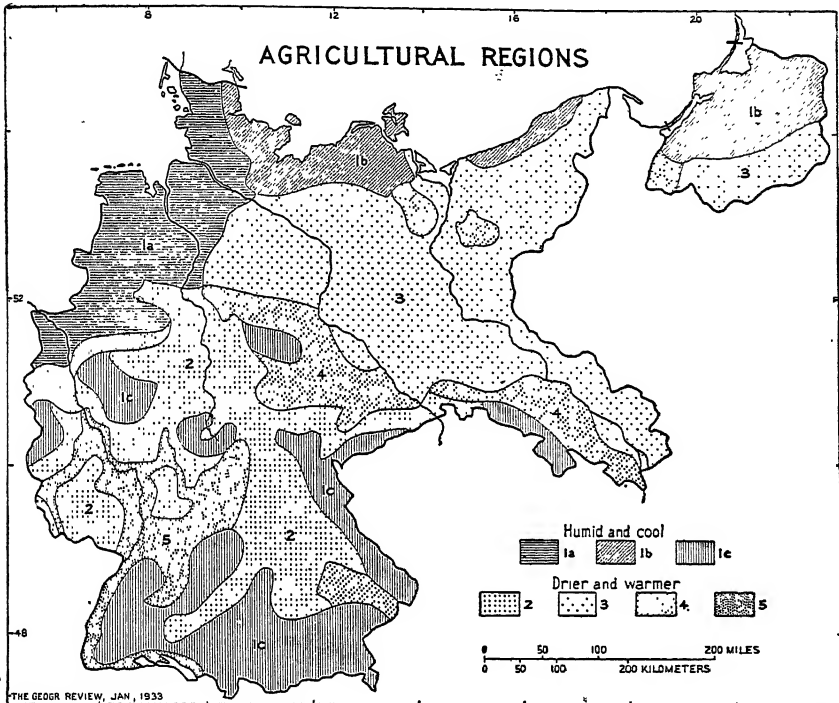
<sup>b</sup> Unit, metric ton.

**Sugar Beets.**—Sugar beets and wheat compete for the better soils, while rye and potatoes compete for the poorer areas. Germany has done much to develop sugar beet culture and to improve the sugar yield of the beet. Accordingly it is not surprising that this nation long led the world in sugar beet production. In 1931 it was finally surpassed by Russia in the production of sugar beets, but it still leads that country and the world in the production of beet sugar. The chief beet-growing areas are the valleys of the Elbe and the Oder, although a minor center occurs in the northwest.

**Other Crops.**—Oats constitutes the principal fodder grain of Germany, and production is distributed quite uniformly throughout the country. Wheat occupies only about half the acreage of oats, and is to be found in the more fertile valleys of the central and southern portions of the country. The acreage devoted to this crop is increasing, and German scientists are working on the problem of developing a type of wheat which will be suited to conditions in the northern plain. Beer is the national drink of Germany, and the crops from which it is made occur principally in the south. Hops are raised on the more fertile soils of Bavaria, while barley, which is used both for brewing and as an animal food, is raised upon the slopes of the southern high-

lands. The mild climate of the Rhineland causes such crops as tobacco, the vine and tree fruits to be of importance.

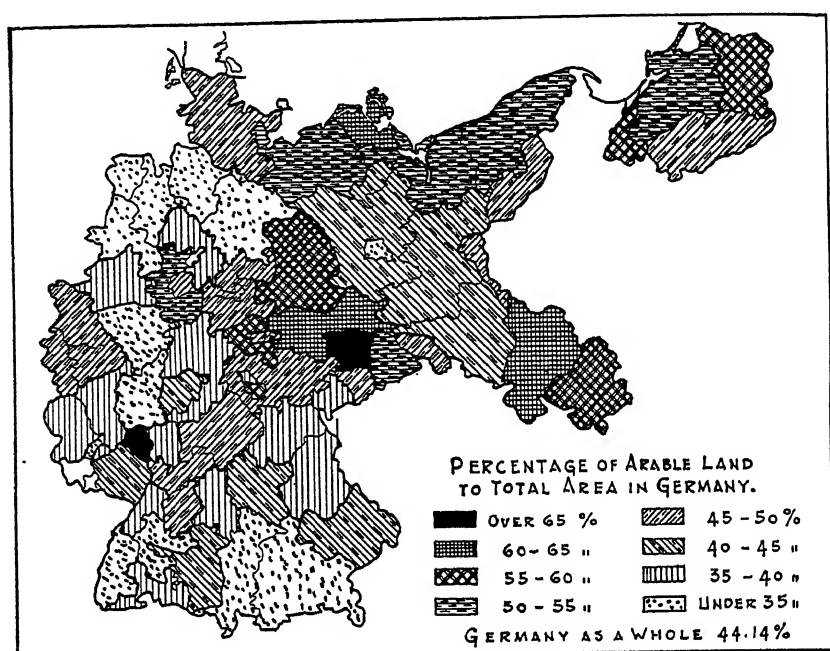
**The Raising of Livestock.**—Within recent years Germany has been typical of many sections of western Europe in giving increasing attention to the raising of livestock. Their importance is shown by the



The agricultural regions of Germany. Key: I, humid and cool regions receiving more than 60 per cent of the income from livestock: 1a, lowlands—dairying and beef; pasture, hay, forage crops; 1b, rolling land—dairying, forage crops, pasture; 1c, foothills and low mountain ranges—dairying, hay, pasture; II, drier and warmer regions, receiving 40 per cent and more of the income from crops: 2, hilly—grain and livestock; forage crops; 3, plain and rolling—rye, potatoes, livestock; 4, plain and rolling—wheat, barley, sugar beets, livestock; 5, river bottoms and hilly land—wine, fruit, grain. (From "Agricultural Conditions and Regions of Germany," by Heinrich Niehaus, courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

fact that 17 per cent of the entire area of the country is in permanent meadow and pasture, and 36 per cent of the cultivated area is devoted to hay. Additional evidence is to be found in the fact that prior to the war the country produced 90 per cent of its meat and 64 per cent of its fat requirements. As the number of cattle and swine is at present greater than in pre-war days, these percentages may well have increased.

In addition to providing food, the animals perform a valuable service by the addition of large amounts of natural fertilizer.



The percentage of arable land to total area in Germany. (After *Deutsche Wirtschaftskunde*.)

## FORESTS

Germany has been a pioneer in scientific forestry, and has served as a model for other nations who desired to achieve maximum efficiency in the use of this resource. The annual cut is restricted to the annual growth, the most desirable species of trees are selected, and the forests are as carefully tended as any crop. The thinning of the trees and the removal of the usual undergrowth give the forests the appearance of parks, and in fact many of them are used for this purpose, thus serving the dual function of supplying wood and providing delightful recreation grounds.

Approximately one-fourth of Germany is unsuitable for agriculture, because of either relief or poor soil. The majority of such sections are forested, and are at present supplying about two-thirds of the country's timber needs. Most of the forests are located in the rugged areas of the southern and central portion of the country, but a con-

siderable acreage of timber is also to be found on the poorer soils of the central and eastern portions of the German plain.

### MINERAL RESOURCES

The rapid economic expansion of Germany following the formation of the Empire was in large measure made possible through the possession and effective use of such minerals as coal, iron and potash. The first two laid the basis for that astounding industrialization which almost overnight changed Germany into a leading industrial nation. German energy and organizing ability were applied so successfully to these resources that by 1913 the country led Europe in the production of iron ore, ranked second only to the United Kingdom in the mining of coal, and had almost a world monopoly in the production of potash. The Treaty of Versailles resulted in serious losses of all three of these minerals. Compared with 1913, Germany's total losses aggregated some 26 per cent of its pre-war output of coal, 80 per cent of its output of iron ore, and important deposits of potash. Despite these losses, the nation still has ample coal and potash to meet its needs, although it has become largely dependent upon outside sources for its iron ore.

**Coal.**—Germany's coal resources have played an important part in the location of the principal industrial areas, and have made possible the tremendous development of the iron and steel and other heavy industries. These resources are still large, and are for the most part found in three districts, the Lower Rhine and Westphalia, Silesia, and the Saar Basin; small deposits are also to be found in Saxony, Bavaria and a few other regions.

Upper Silesia and the Ruhr combined produce approximately 90 per cent of the coal mined in Germany. It has been largely the increased activity of these two areas that enabled the country to increase production within its present boundaries by nearly 17 per cent between 1913 and 1929.

Although exports have declined since 1913, Germany still sends approximately 15 per cent of its output to neighboring countries. Because its principal mining centers are at least 140 miles from the coast, it is hampered in competing with the United Kingdom in overseas exports, and consequently most of its coal travels by rail or inland waterway to bordering nations.

*The Uses of Coal.*—The Germans have applied their helpful friend, science, to the use of coal, with the result that they have made it an important raw material as well as a fuel. Instead of being sold



in its raw state, part of the coal is powdered or put in the form of briquets to make it more available for use. Still another part is subjected to high or low temperature carbonization, and thus divided into its components, coke, tar and gas, which provide a vast variety of raw materials for the chemical industry. Recently another part has been put through a hydrogenation process, and so liquefied as to provide various grades of oil and grease. So extensive is the use of these various processes in Germany that today only 40 per cent of the coal mined is sold as raw coal, and this percentage is expected to decrease in the future.

**Lignite.**—Lignite has recently become of tremendous importance in Germany, and has replaced the harder coals in many industries. This country has the largest reserves in Europe, and in 1929 produced 76 per cent of the world's total supply.

Deposits of lignite are widely scattered, but the Saxony-Thuringia region provides some 47 per cent of the total German output. The Köln district furnishes some 29 per cent of the total mined, and considerable amounts are produced in the Oder Valley and in the Wester Wald. Bavaria has small deposits but they are of exceptionally high quality.

**Iron.**—Despite the loss of 80 per cent of its deposits as the result of the peace treaties, Germany still ranks fourth among the European powers in iron ore reserves. Unfortunately, however, these reserves are widely scattered, and some are of inferior quality. Accordingly only a portion of them are used, and Germany has to depend upon imported ore to meet most of its requirements. Thus for the three-year period 1927-1929, approximately 70 per cent of the ore used was imported. Unfortunately, since the World War political difficulties have interfered with the normal exchange of Ruhr coal for Lorraine ore, so that the greater part of the imported ore comes from Sweden. This has had political results, in that it has made Germany less dependent on France and consequently less interested in improving political and economic relations with its neighbor. At the same time, the Lorraine industry is still largely dependent upon Ruhr coal, and France is consequently vitally interested in Germany's economic recovery.

The east Rhine district is the principal ore-producing section of present-day Germany. This contains the famous Siegerland deposits, which are probably the most valuable in the country. This district has the advantage of having fairly high-quality ores located near the Ruhr coal, with excellent transportation facilities available. The Weser dis-

trict ranks second in importance, and smaller amounts are produced in northern Bavaria and Thuringia.

**Potash.**—Prior to the World War, Germany had virtually a monopoly of the world's production of potash salts. The greatest deposits were located in central Germany between the middle courses of the Elbe and Weser Rivers, around the city of Staszfurt. This region covers approximately 100 square miles and is estimated to contain 20,000,000,000 metric tons of potash, or enough to supply the needs



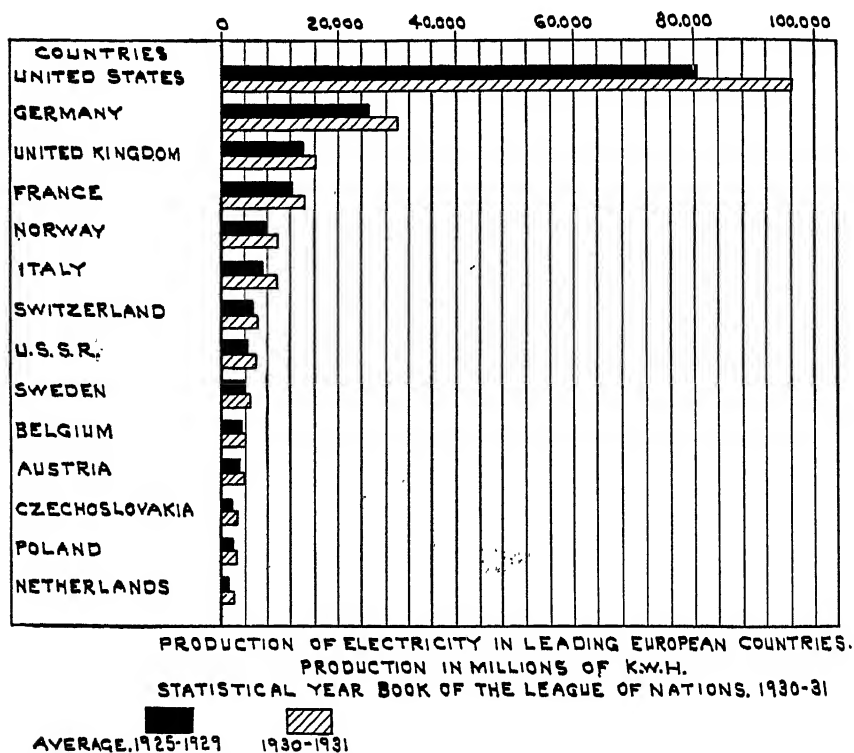
The valley of the Mosel, Germany. (Courtesy of the German Tourist Information Office, New York.)

of the world for 2000 years at the present rate of consumption. In 1904 deposits were also discovered near Mulhouse in Alsace. These are estimated to be only about one-sixth as large as the Staszfurt deposits.

Before the World War, the Alsatian deposits were but slightly developed, due to the policy of the German Potash Syndicate which restricted production in that area to 5 per cent of the amount produced around Staszfurt. With the return of Alsace to France, production in that area increased rapidly. It not only supplied an increasing French demand, but was exported extensively through the port of Anvers. The present relative position of the two deposits is shown by the fact that in 1931 Germany produced 1,078,000 metric tons, while France produced 382,000.

## WATER POWER

Coal and lignite play such prominent parts as sources of power that the importance of water power is frequently overlooked. Nevertheless, Germany ranks fourth among the European states in the amount of water power developed, and has recently increased its use



The production of electricity in the leading European countries in K.W.H. (*Statistical Yearbook of the League of Nations, 1930-31.*)

of this resource more rapidly than any other country except Italy. Most of the 2,000,000 horsepower that have been developed are to be found in the southern highlands, especially in the Bavarian Alps. The power thus developed is used to generate electricity to provide motive power for the railways and to supply industrial and domestic needs.

## MANUFACTURING

The rise of German manufacturing, from the formation of the Empire to 1914, is one of the most remarkable economic achievements

of modern times. It must not be thought, however, that German industry was unimportant prior to 1870. It had introduced English methods and machinery, and had become a serious rival of England in the manufacture of cotton, and its production of iron was increasing rapidly. Following the formation of the Empire, the government introduced many measures to advance manufacturing. These measures, coupled with such natural advantages as abundant natural resources, a favorable location for access to European markets, and an industrious and scientifically minded population, enabled Germany to become the first industrial nation of the continent by 1913.

TABLE 94  
PERCENTAGE OF GAINFULLY EMPLOYED POPULATION OF GERMANY ENGAGED IN AGRICULTURE AND INDUSTRY<sup>1</sup>

Year	Agriculture and Forestry	Industry and Handicraft
1882.....	42.2	33.8
1895.....	36.3	37.8
1907.....	34.0	39.1
1925.....	30.5	41.4

**Iron and Steel.**—The manufacture of iron and steel forms the basis of the industrial strength of modern Germany. Prior to the formation of the Empire, the industry was of but slight importance, but as soon as political consolidation had been achieved the favorable natural factors made themselves felt, and the industry grew rapidly. Blessed with the most abundant supplies of good coking coal on the continent, possessed of an ample amount of iron ore in Lorraine and in scattered deposits throughout other sections, equipped with excellent transportation facilities, and manned by efficient and industrious workers, it is not surprising that Germany rapidly forged ahead in this activity and in 1903 wrested from the United Kingdom the leadership of the continent. Progress continued unchecked until the World War. However, the peace treaties deprived Germany of 42 per cent of its pre-war production of pig iron and 37 per cent of its pre-war production of raw steel. This caused a serious set-back in pig iron and steel production, but by 1929 pig iron production was 70 per cent of that of 1913, and steel production 85 per cent. The country seemed secure in the leadership of the European states in both of these products. Unfortunately, however, the depression dealt German industry an especially

<sup>1</sup> Bearbeitet im Statistischen Reichsamt, *Deutsche Wirtschaftskunde*, Verlag von Reimar Hobbing, Berlin, 1930.

severe blow, and in 1930 France surpassed it in the production of pig iron, although it still retained first place in the production of steel.

TABLE 95  
OCCUPATIONS BY INDUSTRIES OF THOSE ENGAGED IN GERMAN  
INDUSTRY AND HANDICRAFT, 1925<sup>1</sup>

Industry	Number Engaged	Percentage of Total
Iron and metal industries.....	3,468,300	26.2
Construction industry.....	1,707,700	12.9
Clothing industry.....	1,590,300	12.0
Food and narcotics.....	1,346,400	10.2
Textile industries.....	1,206,700	9.1
Lumber and timber products.....	966,000	7.3
Mining.....	847,400	6.4
Stone and earth products.....	686,800	5.2
Paper and related products.....	536,300	4.1
Chemical industry.....	352,100	2.7
Water, gas and electricity.....	178,400	1.3
Leather and linoleum.....	174,000	1.3
Musical instruments and toys.....	109,900	0.8
Rubber and asbestos.....	68,800	0.5
Total.....	13,239,100	100.0

**Machinery.**—The fact that nine-tenths of the iron and steel produced in Germany is turned into finished products within the country gives some indication of its importance in the manufacture of machinery. Today this country and the United Kingdom produce approximately equal amounts of machinery other than electrical, and far surpass any other European country in this respect. Germany is slightly in

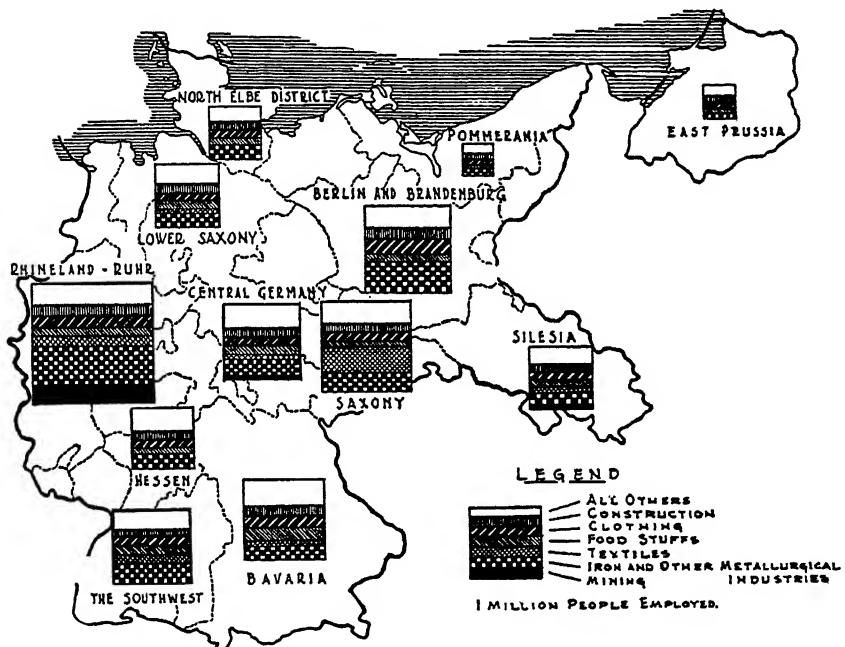
TABLE 96  
TOTAL AND PER CAPITA OUTPUT OF ELECTRICAL POWER IN  
PRINCIPAL EUROPEAN COUNTRIES, 1931  
(U. S. Department of Commerce)

Country	Total (million kilowatt hours)	Per Capita (kilowatt hours)
Germany.....	25,260	391
France.....	13,974	334
Italy.....	10,603	257
United Kingdom.....	11,401	247
Norway.....	10,500 <sup>a</sup>	3,737 <sup>a</sup>
Sweden.....	4,982 <sup>a</sup>	811 <sup>a</sup>
Belgium.....	3,851	476
Switzerland.....	5,707	1,397
Czechoslovakia.....	3,043	205

<sup>a</sup> 1929.

the lead in the export of machinery, ranking second only to the United States among the world powers.

In the production of electrical equipment, Germany stands far in the lead among the European powers, while in the export of such goods it is the most important nation in the world. The activity of the German scientists, and the fact that the country itself uses more electrical power than any other nation except the United States, have played important parts in this leadership.



The distribution of German industries. (After *Deutsche Wirtschaftskunde*.)

The manufacture of machinery is widespread, although there is considerable localization of various branches of the industry. Many of the heavier machines are produced in the cities of the Ruhr and adjoining districts in order to be near raw material. In some cases markets have seemed to be the most important localizing influence, as is illustrated by the manufacture of printing machinery in Leipzig, of textile machinery in Saxony, of beet sugar machinery in Magdeburg, and of agricultural machinery in Magdeburg, Mannheim and Leipzig. In other cases the abundance and quality of the labor supply seem to have exercised a predominant force, as is shown by the manufacture of electrical equipment in Berlin. Solingen in the Rhineland, the great center

of the cutlery industry, illustrates that an early start has at times been the determining factor.

**Textiles.**—The preeminence which the German States enjoyed in the manufacture of textiles was lost as the result of British competition in the seventeenth and eighteenth centuries, and has never been recovered. The transfer from the domestic to the factory system came slowly in this industry, and it was not until the latter half of the last century that the nation became an important factor in the world markets. However, the textile industries have increased rapidly within the past fifty years, and Germany today ranks approximately on a par with France in this field of activity. Something of its importance is indicated by the fact that today it ranks second among the European nations in the manufacture of cotton, silk and rayon, and third in wool.

The loss of Alsace was a severe blow to the German cotton industry, as that region was one of the leaders in this activity. Nevertheless, additions to existing plants in other areas have resulted in Germany's having approximately as many spindles now as in 1914. The south and west have long been the leading sections in this industry, especially Baden, Bavaria and Württemberg. Saxony has also increased its production, and cotton aids in making this the leading textile manufacturing state of the nation.

Saxony is the greatest center of woolen manufacturing, although important amounts are produced in Bavaria and in several of the Prussian provinces. The silk industry resembles cotton in being located largely in the west in Rhenish Prussia and Baden. Krefeld is one of the greatest silk centers, and it is difficult to attribute its importance to any purely geographical factor.

**Chemicals.**—The great part played by science makes the manufacture of chemicals one of the most typical of modern German industries. It is also the one in which the country has made its most distinctive contribution to industrial progress. The great economic importance of this industry is shown by the fact that in 1929 the total German output of all chemicals was estimated at approximately \$1,000,000,000, while exports were valued at about \$327,000,000. Germany's production was thus 16 per cent of that of the entire world, placing it second only to the United States in this respect. In the export of chemicals this country exceeds all other nations, furnishing some 25 per cent of all such products entering into international trade.

The importance of the German people in this activity is due to a variety of factors, among the more important of which are their interest in science, the number and excellence of their technical schools,

and the presence of such raw materials as coal, basic slag, salt and potash. The latter factor has played the most important part in the location of the industry, although occasionally such factors as the abundance of power or the presence of especially notable training institutions have been the determining factors.

In the Rift Valley of the Rhine, the presence of potash and other salts has led to an important concentration of the industry, especially around Ludwigshafen. Frankfurt-am-Main is the present center of the German Dye Trust and, together with other sections of the Main Valley, manufactures large amounts of chemicals. The Ruhr Valley, with its vast supplies of coal, is one of the greatest centers for the manufacture of the various products derived from this raw material. The great salt and potash deposits of Prussian Saxony have made this section important for its chemicals. München, Berlin and Köln are all important centers, and smaller units of the industry are scattered in all parts of the country.

#### TRANSPORTATION

**The Canals of Germany.**—In addition to the 6600 miles of navigable rivers, Germany contains 1400 miles of canals. The total length of inland waterways is thus about 20 per cent of that of the railways, and the amount of freight carried is in about the same proportion. For the most part, these canals link the principal rivers of the northern plain, thus providing water communication between the industrial centers of the west and the agricultural sections of the east. Today a complete system of canals extends from the Rhine to the Oder, and then on to the Wista (Vistula). The construction of these east and west canals has been made easy by the old glacial valleys which unite the principal rivers. Canals also link the Rhine with such neighboring rivers as the Rhône, the Marne and the Danube, and connect it with the port of Anvers. Some of these canals have been difficult and costly to construct. At present the canal connecting the Rhine and the Danube by way of the Main Valley is being enlarged and improved. Due to the highlands between the valleys of the Main and the Danube, this has proved to be a difficult undertaking. Many of these canals have been constructed for the purpose of providing additional transportation in case war or any other emergency puts a severe tax on the railways. As a consequence, some of them cannot be justified on purely economic grounds.



**Rail and Air Transportation.**—The development of a complete rail system in Germany had to await the unification which accompanied the formation of the Empire. Prior to that time, each state constructed its own lines with a view to its individual needs, and regardless of the needs of its neighbors. Following unification, rail construction proceeded rapidly, and followed a definite plan worked out from the point of view of military and economic necessity.

Today Germany has one of the most complete and efficient railway systems to be found in Europe. The 33,466 miles of line place it third among the continental powers in this respect. Among the larger nations of Europe it ranks second to France in mileage per 1000 inhabitants and second to the United Kingdom in mileage per 1000 square miles of territory. However, in the number of passengers and the amount of freight carried, it surpasses all other European states. Berlin is the greatest rail center, but every section of the country is well served with lines.

Although military aircraft are prohibited, Germany leads all other European countries in commercial aviation. All important centers in the country are served by air lines, and Germany is also connected with neighboring countries. Something of the growing importance of this form of transportation may be seen from the fact that in 1923 some 8500 passengers and 43,000 tons of goods were transported, while by 1930 these figures had risen to 136,048 and 2,469,000, respectively.

**Merchant Marine.**—The construction of a large merchant marine was the necessary accompaniment of Germany's plan for a large foreign trade. As a result, the merchant tonnage of the country increased some 150 per cent from 1895 to 1913. In the latter year Germany ranked third among the world powers in this respect, and was becoming a formidable rival of Great Britain for the carrying trade of the world. Following the war the country was forced to surrender nearly all of its tonnage to the Allies as compensation for the ships sunk by submarines. As a result, the gross tonnage of Germany decreased from some 5,000,000 tons in 1913 to 673,000 tons in 1920. Faced with this situation, the country started one of the most phenomenal programs of marine construction ever witnessed in human history. Tonnage soared almost unbelievably, until in 1930 it had reached 4,229,000 tons, placing Germany approximately in a tie with Japan for third position among the world powers. The nation has a present advantage over all competitors in that its merchant fleet is made up entirely of modern, efficient ships.

## FOREIGN TRADE

The rise of Germany to a position of major economic importance would have been impossible without the rapid growth of foreign trade. German agriculture was unable to supply sufficient food to meet the needs of the increasing population. The rapidly growing industries also had to depend upon foreign sources for certain raw materials, and upon foreign markets. Following the formation of the Empire, the need for such trade was quickly recognized, with the result that the government and the various industrial groups cooperated in working out a systematic program for the capture of foreign markets. So successful was this program that it raised the country from the position of relative insignificance which it occupied in 1871, to a total trade

• EXPORTS OF PAPER - 1930 • (IN THOUSANDS OF DOLLARS)						
COUNTRY	20,000	40,000	60,000	80,000	100,000	120,000
CANADA						
GERMANY						
SWEDEN						
NORWAY						
FINLAND						

Exports of paper, 1930. In thousands of dollars. (U. S. Department of Commerce.)

of some \$5,000,000,000 and third place among the commercial nations of the world in 1913.

A variety of factors contributed to this rapid rise. The abundant supplies of coal and iron and the industrial capacity and energy of the German people aided in the production of surplus products which were in wide demand. The central location of the country and its excellent transportation facilities provided easy contacts with all sections of the continent. The settlement of German emigrants in such regions as the United States, Brazil and Chile provided ready markets for German goods. The close cooperation of the government with the industries also aided materially. Political and economic penetration in south-eastern Europe and the proposed construction of the Berlin-to-Bagdad railway had as their objectives the expansion of German trade with that portion of the continent and with the Near and Far East. The nation's attempt at colonial expansion was partially actuated by the

same motives, although the German colonies never contributed greatly to the economic well-being of the country.

The World War dealt a severe blow to German trade. Nearly all the nation's foreign markets were lost to other exporting countries, and the widespread hostility arising from the war retarded any effort to recapture them. The colonies were lost, and plans for commercial expansion toward the east were destroyed. In addition, German productive capacity was lowered, due to the loss of valuable resources and man power. Faced with such an unfavorable situation, the rise of German trade since the war has been remarkable. In 1930 the country again occupied approximately the same relative position among the powers as in 1913, and its exports actually exceeded in value those of pre-war years.

The character of the foreign trade reflects the highly industrialized character of the nation. Some 79 per cent of all imports consist of foods and industrial raw materials, while manufactured goods make up 72 per cent of all exports. As might be expected, iron and steel, machinery and chemicals make up the largest percentage of such exports. Coal is the only raw material exported in any quantity. Normally imports have exceeded exports, and the unfavorable balance has been made up by various invisible items. However, within the past few years exports have exceeded imports, largely as a result of the necessity of making large foreign payments for reparations and interest on borrowed capital.

TABLE 97  
DESTINATIONS OF GERMAN EXPORTS  
(percentage of total)  
(U. S. Department of Commerce)

Country	1913	Average 1926-1930	1931
United Kingdom.....	14.2	10.3	11.8
The Netherlands.....	6.9	10.2	9.9
United States.....	7.1	6.9	5.1
France.....	7.8	6.8	8.7
Czechoslovakia.....	...	4.6	4.4
Switzerland.....	5.3	4.5	5.6
Belgium-Luxembourg....	...	4.3	4.8
Italy.....	3.9	4.3	3.5
All others.....	54.8	48.1	46.2
Total.....	100.0	100.0	100.0

The major part of Germany's foreign trade is with other European states. These nations receive 74 per cent of the exports and supply some 53 per cent of the imports of the country. The adjoining states receive a considerable proportion of this trade. Thus eight of the first ten states to which the country exports lie immediately surrounding it and are reached by rail or inland waterways. The United Kingdom, the most important market for German goods, is easily accessible across the narrow sea. The United States is the only country in the first ten which lies outside of Europe. Imports are more widely distributed in their origin. Such non-European areas as the United States, India, the Argentine and China have to be drawn upon to supply needed foods and industrial raw materials. Nevertheless, seven of the first ten countries which supply imports are located within Europe, and five of these adjoin German territory. It is thus evident that railways and inland waterways carry an important proportion of the foreign trade of the country.

TABLE 98  
ORIGINS OF GERMAN IMPORTS  
(percentage of total)  
(U. S. Department of Commerce)

Country	1913	Average 1926-1930	1931
United States.....	15.9	14.2	11.8
United Kingdom.....	8.1	6.3	6.7
Argentina.....	4.6	6.0	3.1
The Netherlands.....	3.1	5.2	5.7
France.....	5.4	4.9	5.1
British India.....	5.0	4.4	4.2
Czechoslovakia.....	...	3.7	3.6
Belgium-Luxembourg.....	...	3.4	3.3
All others.....	57.9	51.9	56.5
Total.....	100.0	100.0	100.0

Today, just as prior to the World War, Germany is looking toward eastern and southeastern Europe as zones for commercial expansion, which is natural, as most of these areas produce foods and industrial raw materials which Germany needs and offer markets for German manufactured goods. The Danube Valley also serves as an excellent natural route for trade with the southeast. It is thus not surprising that Germany looks upon the Danube states and upon Poland and Russia as her natural fields for commercial expansion. If Germany fol-

lows a policy of peaceful economic penetration, these regions may well add materially to the future commercial expansion and prosperity of the country.

## BIBLIOGRAPHY

- Angell, J. W., *The Recovery of Germany*, Yale University Press, New Haven, 1929.
- Bauer, H. A., "Economic Adjustments in Bavaria," *Economic Geography*, 1930, vol. 6, pp. 257-277.
- Bearbeitet im Statistischen Reichsamt, *Deutsche Wirtschaftskunde*, Verlag von Reimar Hobbing, Berlin, 1930.
- Bendix, L., "Germany's Economic Development Since the Armistice," *Annals of the American Academy of Political and Social Sciences*, 1926, vol. 126, pp. 22-33.
- Daugherty, W. T., "German Chemical Developments in 1929," *Trade Information Bulletin No. 690*, U. S. Department of Commerce, Washington, 1930.
- Delahanty, T. W., "German Dyestuffs Industry," *Miscellaneous Series No. 126*, U. S. Department of Commerce, Washington, 1924.
- Dietrich, B., Gradmann, R., Hence, A., Jaeger, F., Reinhard, R., and Rudolphi, H., *E. von Seydlitz'sche Geographie: Hundertjahr-Ausgabe: Handbuch Ester Band Deutschland*, Ferdinand Hirt, Breslau, 1925.
- Gooch, G. P., *Germany*, Charles Scribner's Sons, New York, 1925.
- Gradmann, R., *Süddeutschland*, J. Engelhorn's Nachf., Stuttgart, 1931, 2 vols.
- Haushofer, K., et al., *Der Rhein*, Kurt Vowenckel, Berlin, 1931.
- Hoar, H. M., "Potash," *Trade Promotion Series No. 33*, U. S. Department of Commerce, Washington, 1926.
- LaBlache, P. V., and Gallois, L., *Europe Centrale*, vol. 1, Géographie Universelle, Tome 4, Librairie Armand Colin, Paris, 1930.
- Levainville, J., "The Economic Function of the Rhine," *Geographical Review*, 1924, vol. 14, pp. 242-256.
- Lowrie, W. L., "German Chemical Developments in 1931," *Trade Information Bulletin No. 795*, U. S. Department of Commerce, Washington, 1932.
- Michael, L. G., "Agricultural Survey of Europe—Germany," *Department Bulletin No. 1399*, U. S. Department of Agriculture, Washington, 1927.
- Michel, H., *Beiträge zur Geographie der Deutschen, Kulturlandschaft*, Druck und Verlag von Gbrüder Knauer, Frankfurt-am-Main, 1925.
- Niehaus, H., "Agricultural Conditions and Regions in Germany," *Geographical Review*, 1933, vol. 23, pp. 23-47.
- Poggi, E. M., "The German Sugar Beet Industry," *Economic Geography*, 1930, vol. 6, pp. 81-93.
- Rouche, J., "La Navigation du Rhin," *Bull. Soc. d'Encour pour l'Industrie Nationale*, 1930, vol. 129, pp. 551-604.

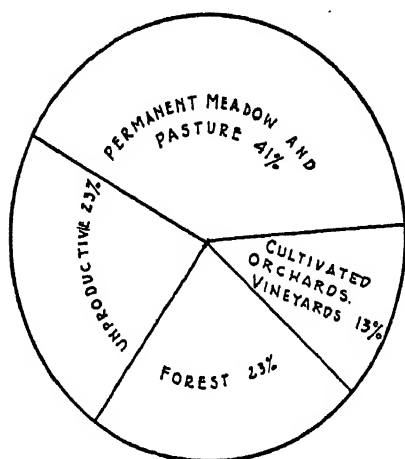
## GERMANY

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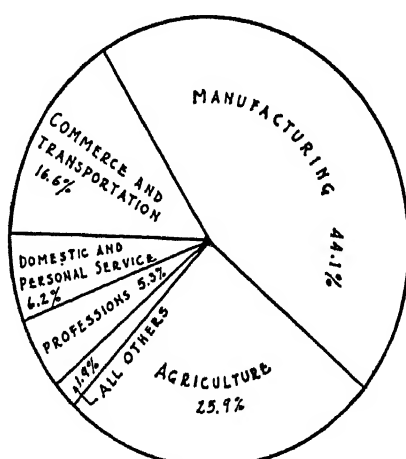
- Schneider, R. J., "The Port of Hamburg," *Port Series No. I*, U. S. Department of Commerce, Washington, 1930.
- Schnitzer, J., "Leather Industry and Trade of Germany," *Trade Information Bulletin No. 744*, U. S. Department of Commerce, Washington, 1931.
- Schultze, J. H., *Die Berufsstruktur der Rhein-Mainischen Bevölkerung*, H. L. Brönners Druckerei u. Verlag, Frankfurt-am-Main, 1929.

## SWITZERLAND (SCHWEIZ, SUISSE OR SVIZZERA)

MOUNTAINS influence every phase of Swiss life. The Alps and the Jura formed the natural ramparts which enabled the sturdy and liberty-loving peasants to defy the armies of Austria and Burgundy and achieve independence for their tiny cantons. The rich pastures, found in the valleys and on the Alpine slopes, have encouraged the development of a dairy industry, which is the leading phase of Swiss agricul-



Occupations of the gainfully employed population of Switzerland. Percentages of total employed. (U. S. Department of Commerce.)



Uses of land in Switzerland. Percentages of total area. (U. S. Department of Commerce.)

ture. The abundant power generated from the rushing mountain torrents is the only important industrial resource of Switzerland, and has aided the nation in achieving its present high degree of industrialization. The possession of important Alpine passes has caused the country to be crossed by numerous transportation lines which have improved its economic position. Each year the beauty of the snow-capped peaks and forest-bordered lakes attracts thousands of tourists whose expenditures play an important part in the national economy. Truly Switzerland is a product of the mountains.

It is incorrect, however, to use this nation as a typical example of man's response to a mountainous environment. An unusually favorable

situation, combined with a very capable population, have here resulted in the most effective relationship between man and his environment to be found in any mountain area throughout the world.

The influence of the mountains is also shown in the division of Switzerland into twenty-two cantons, most of which occupy distinct valleys and are separated by physical barriers. The isolation of these valleys, more effective in the past than at present, gave rise to local interests and local patriotism. As a consequence, the cantons have preserved a high degree of local autonomy. The powers of the federal government are decidedly limited, and the cantons vigorously resist any interference within their spheres of influence.

It is not surprising that such a mountainous environment produced one of the first and purest democracies. Inequalities of wealth were lacking, and the hardy mountaineers refused to recognize any superior. As early as 1294 the first Landsgemeinde met in the canton of Schwyz. This institution consisted of a meeting of all the adults of the canton for the purpose of electing officers and passing laws. It endures to this day, and is one of the simplest and most thorough expressions of democracy in action. The governments of most of the other cantons have also been democratic, and Switzerland is today one of the most democratic states in Europe.

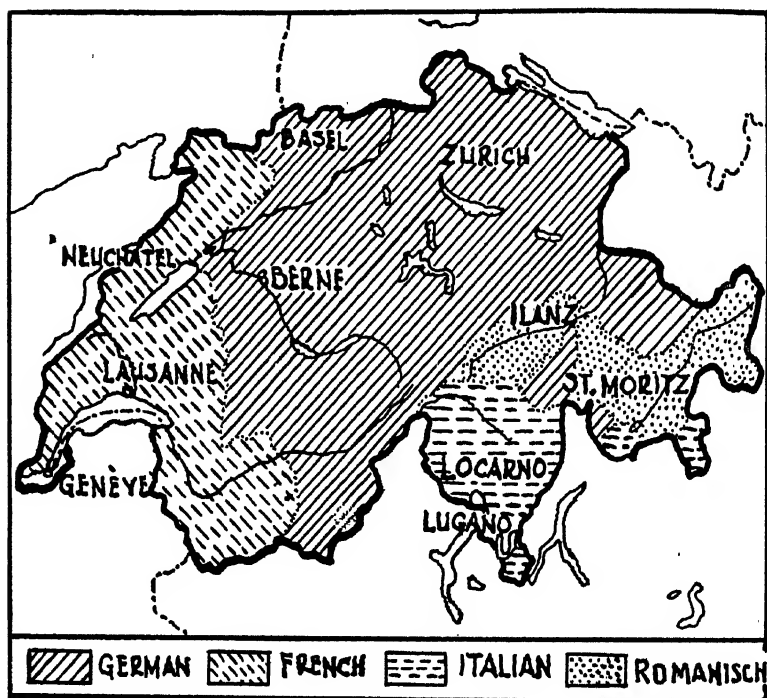
### POPULATION

The Swiss serve as an excellent example of a group differing in race, language and religion, and yet living together in harmony and working in unity for the welfare of the nation. The mixed population is the result of the central location of the country and its contacts with its neighbors. As relief facilitates contacts with Germany, 71 per cent of the Swiss speak some German dialect. The French have had moderately easy access to the western portion of the country, and there are to be found the 21 per cent of the population who speak French. Until recently, relief has restricted Italian influence to the southern slopes of the Alps, and only 6 per cent of the Swiss normally speak Italian. In the less accessible districts a group is found which speaks Romanisch, a distinct Latin dialect. Today German, French and Italian are all regarded as official languages. This diversity of languages has been an asset to the commercial contacts of the Swiss with neighboring people, and has aided in attracting tourists and international organizations to the country.



Switzerland is also divided on the basis of religion. Some three-fifths of the population are Protestant and two-fifths Catholic. The nation has long been characterized by religious and political tolerance, and consequently has attracted exiles from many other lands.

**Number and Distribution.**—Although the nation as a whole has an average of 255 people per square mile, the greatest density is found on the plateau, while many of the isolated mountain districts are thinly populated. Thus the Canton of Genève has a population density of



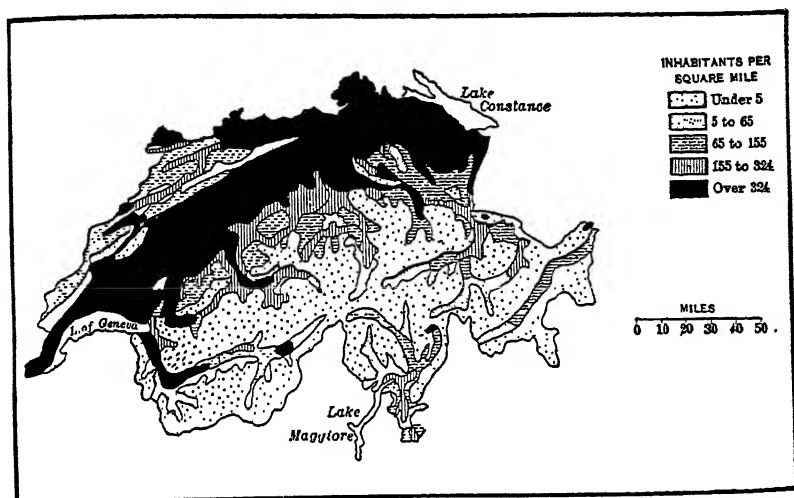
The distribution of languages in Switzerland. (After Bowman.)

1600 per square mile, while the Canton of Graubünden (Grisons) has but 43 per square mile. The majority of the population is rural, only 31 per cent living in cities of 10,000 or over.

The limited resources of the country have been in part responsible for the slow growth of Switzerland's population. Recently this growth has been somewhat speeded up by the immigration of Italians. However, the country is typical of other mountain areas in that it exports men from the more rugged sections. Thus between 4000 and 8000 Swiss emigrate each year.

## SIZE AND SITUATION

Present-day Switzerland is the result of gradual territorial expansion covering a period of more than five centuries. It had its birth in the Perpetual League concluded between the three Forest Cantons of Uri, Schwyz and Unterwalden in 1291. In 1315 the men of these three tiny cantons beat back the mighty armies of the Hapsburgs and established a tradition of unity and common action which has served as an inspiration throughout Swiss history. Following this success, new



The distribution of population in Switzerland. (Reprinted by permission from "Economic and Social Geography," by Huntington, Williams and Van Valkenburg, published by John Wiley & Sons, Inc.)

cantons joined the League, until by 1353 it had eight members, and by 1513 thirteen. From time to time new cantons joined, until the addition of Valais, Neuchâtel and Genève in 1815 brought the state up to its present size.

Covering 15,944 square miles and containing slightly over 4,000,000 people, Switzerland supports a population approximately equal to that of Massachusetts in an area twice the size of that state.

**Situation and Boundaries.**—The natural boundaries of Switzerland consist of the Jura on the north, the Alps on the south, Lac Léman (Lake Geneva) on the west, and the Boden See and the Rhine on the northeast. The thirteen cantons which comprised the Swiss Federation prior to 1798 were located within these boundaries, but since that time the nation has expanded beyond them and at the expense of its

neighbors. The whole of the Canton of Ticino, as well as portions of other southern cantons, lies to the south of the crest of the Alps and encroaches on Italian territory. In the west and the southwest the inclusion of a portion of the Rhône Valley and sections beyond the Jura marked an expansion into lands formerly belonging to France and Savoy. Toward the northeast and across the Rhine is Schaffhausen, which was formerly German territory. The inclusion of the Engadine likewise marked an eastward expansion at the expense of Austria. While the country today consists of a compact body of territory, its political frontiers are not consistently related to the physical boundaries.

Situated between three of the major European powers, Switzerland naturally serves as a convenient buffer state. The majority of its neighbors have recognized its position in this respect by guaranteeing its neutrality. Its frontiers are therefore unguarded except on the south, where fortifications guard the St. Gotthard and Simplon Passes. Switzerland's control of the transalpine routes also tends to insure its independence. These are so important that none of the great powers would wish to see them in the hands of a possible rival. However, the nation does not depend entirely upon treaties or a strategic location for its protection; on the contrary, by universal military training it has built up an effective fighting force which could offer stout resistance to any invader.

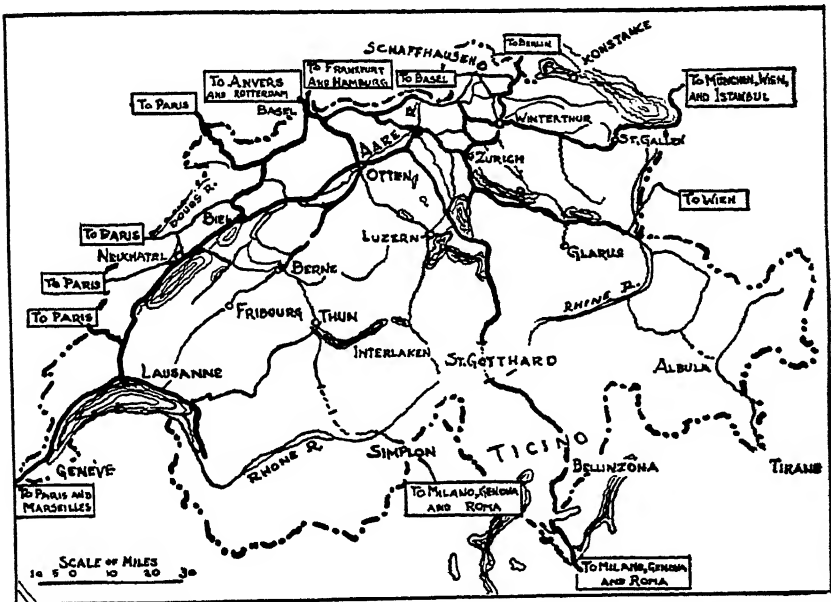
The landlocked character of the country is a handicap to a nation as dependent upon foreign trade as Switzerland. Nevertheless, this handicap has been in part overcome by agreements with neighboring powers guaranteeing free access to the sea over all desirable routes. On the other hand, the situation of the nation in the heart of the continent has decided commercial advantages. The bordering states are among the most active in Europe, and provide large markets and abundant sources of raw materials. Its position across the transalpine routes adds to its commercial contacts. Thus despite its lack of sea-coast, Switzerland ranks high among the world powers in per capita foreign trade.

### CLIMATE

The long, cold winters of the higher portions of Switzerland have restricted agriculture and encouraged household industries, while the cool summers have aided in making the country a recreational center. However, differences in elevation and exposure give rise to a wide

variety of climatic conditions, with consequent variations in human response.

The mean temperature of the plateau varies between 26 and 32 degrees Fahrenheit for January, and between 62 and 68 degrees Fahrenheit for July, while the annual rainfall varies from 35 to 40 inches. In the mountains the temperature decreases and rainfall increases. Here the snow line varies from 8000 to 10,000 feet, depending upon precipitation and exposure. The southern slopes of the Alps have an almost Mediterranean climate which favors the growth of the vine and the



The principal railway lines of Switzerland. (From Swiss Department of Interior.)

mulberry tree, while the northern slopes are forest-clad or support only hardy crops. Exposure also influences rainfall. Windward slopes occasionally receive 90 inches annually, while valleys on the leeward side of the mountains may not have more than 22 inches. There is everywhere sufficient moisture to support agriculture and forests. The climate of Switzerland is thus varied, but is favorable to human development except on the higher elevations.

### GEOGRAPHICAL REGIONS

While mountains dominate the entire country, Switzerland consists of three clearly defined regions. To the northwest the ridges of the

Jura occupy one-sixth of the nation's area, while to the south the towering barrier of the Alps occupies one-half. Between these two the Swiss plateau includes one-third of the area and most of the population and the human activity of the country.

#### THE JURA

The Jura consist of a series of parallel limestone ridges. Roads and railroads follow the valleys, but cross communication is difficult except where streams have cut passes through the ridges. The summits seldom exceed 5000 feet, and consequently do not reach the snow line. This, combined with the heavy rainfall, causes the slopes to be forest covered, and timber is one of the principal products of the region. The cool, moist climate and the glacial soils also encourage the growth of grass in the valleys, and have favored an important development of the dairy industry. Neuchâtel cheese and Suchard's milk chocolate are two dairy products of the Jura having a world-wide reputation. The lower slopes facing toward the south support vineyards. However, the agricultural population of the region is sparse, as but a small portion of the land is suitable for cultivation.

Isolation and the long, cold winters characteristic of portions of the mountains have aided in the growth of home industries. Through long experience great skill has been acquired in fine metal work and wood carving, and this skill has laid the basis for important modern industries. Today the Jura are the center of Swiss watch making, an industry which furnishes one of the most valuable exports of the country. Neuchâtel, which is the gateway to the Jura, and LeLocle are important centers of this activity, but La Chaux de Fonds is the leader, and manufactures about one-fourth of the watches exported from Switzerland.

#### THE SWISS PLATEAU

The Swiss Plateau occupies the heart of Switzerland, being protected on either side by the Alps and the Jura. Lac Lemman blocks its narrow westward extension toward the Rhône Valley, while toward the east it widens; and, although broken by the Bodensee, it is continued in the Bavarian Plateau. Entrance has thus been easiest from the east, and most of the plateau was accordingly settled by German-speaking people.

It is a rolling country of forested ridges and intensively cultivated

valleys. The lower slopes of the ridges are devoted to orchards and vineyards, and prosperous herds of dairy cattle may be seen in all directions. The delightful rural scene is completed by the numerous well-kept, clean farmsteads and attractive little agricultural villages. Along many of the stream banks and at the junction of all the major transportation routes the scene changes. Farmsteads are replaced by factories, and agricultural villages by busy industrial cities around which crowd the workers' dwellings with their accompanying tiny gardens. The whole plateau is thus a hive of activity, the intensity of which is



This exquisite picture formed by the Castle of Chillon and the blue waters of Lac Lemman gives some indication as to why the Swiss lakes attract thousands of tourists each year. (Courtesy of the Swiss Federal Railroads.)

illustrated by the fact that, although it occupies but one-third of the area of the country, it contains two-thirds of its population, and the greater part of its agriculture and industry.

**Lakes.**—Along the borders of the plateau the U-shaped glacial valleys have been dammed by morainic materials, and form a series of attractive lakes. These are used for local transportation, and frequently encourage a community of interest among the inhabitants of their shores. Thus the Vierwaldstätter See (Lake Lucerne), or the Lake of the Four Forest Cantons, tended to unify the interests of Uri, Schwyz, Unterwalden and Luzern to such an extent that they formed the nucleus of the Republic. These lakes also regulate the flow of the rivers

and act as settling basins. Thus the Boden See tends to stabilize the flow of the Rhine, and Lac Lemman performs the same function for the Rhône. The beauty of their wooded and mountain-bordered shores has aided in making such cities as Genève, Lausanne, Luzern, Neuchâtel and Konstanz (Constance) important resort centers.

**Genève.**—Upon the plateau are to be found most of the cities of Switzerland. Genève, at the lower end of Lac Lemman where the Rhône leaves the lake on its way to the southern gate of the Jura, is the social and economic capital of French Switzerland. It controls the commerce which flows through this gate, and the water power of the Rhône has assisted its skilled population in the development of such industries as the production of jewelry, scientific instruments and chemicals. However, its economic importance has been local, while its historical importance has been world wide. It has been the home of many men who have played a major part in world affairs. It was the birthplace of Rousseau, and the adopted home of Calvin, Farel and Voltaire. One need only wander about its streets to be impressed by the number of international organizations which have made it their headquarters. Facing the lake is the imposing home of the League of Nations, while farther along are the International Labour Office, the office of the International Red Cross, and the homes of numerous other international organizations. Its importance as the center of these various activities, as well as the beauty of its location, have attracted so many people from all parts of the world that it has become a truly cosmopolitan city. One might have expected Genève to become the leading city of Switzerland instead of ranking third as it does today, but historical and geographical factors oppose this dominance. It was through the wider eastern gateway that most of the people came who settled the plateau, and it was through the same gateway that the best commercial contacts were established with the North Sea. Thus it was natural that the greatest city of Switzerland should develop toward the east rather than toward the west.

**Basel.**—The eastern end of the plateau is wide, and consequently no one city of that section has assumed the dominant position occupied by Genève on the west. The principal commercial city of the east developed outside the protecting bulwark of the Jura, at the point where the Rhine leaves the mountains and enters the Rift Valley. This site is of great commercial and strategic importance, as it controls the contacts of the Upper Rhine with both the Lower Rhine and the Belfort Gate. From its origin as a Roman fort in A.D. 374 until the completion of the St. Gotthard Tunnel, Basel grew steadily in wealth and impor-

tance. The tunnel increased the speed of its growth, and aided in making it one of the greatest rail centers in Europe. Today it is the most important gateway of Switzerland, and through it pass most of the nation's imports and exports. Local water power and access to outside markets and sources of raw materials have also assisted Basel in becoming an important manufacturing city. It is a leading silk center, and also manufactures some 90 per cent of all the chemicals produced in Switzerland. Its large factories, spacious homes and magnificent public buildings seem to justify its boast of being the richest city of the country, and of ranking second only to Zürich in size.

**Zürich.**—As might be expected, the greatest city of Switzerland is situated within the protecting walls of the Alps and the Jura, where the convergence of transportation routes renders conditions most favorable for the location of a commercial center. Zürich, situated where the Limmat leaves the long Lake of Zürich, occupies such a location. The Vierwaldstätter See (Lake Lucerne) diverts the St. Gotthard route in this direction, and the major east and west routes on the plateau have to pass through this point in rounding the end of Lake Zürich. With the development of the railroads this city thus became the leading commercial center of the plateau. Its economic importance has, however, been vastly increased by the growth of manufacturing. The production of textiles and machinery has made it the greatest industrial center of Switzerland. Its great factories, warehouses and thousands of workers' dwellings make it a modern industrial city, and frequently cause the visitor to forget the great religious and cultural contributions that it has made to the nation.

**Bern.**—When, in 1840, the Swiss Confederation decided to select a single capital, it selected Bern, the most centrally located of any of the important cities. Situated on a high bluff overlooking the Aar, it controls this most typical of all Swiss rivers. Its energetic citizens had also extended their canton until it included sections of the Jura, the plateau and the Alps, thus making it the most representative of any of the cantons. The capital is today the most typically Swiss of any of the large cities. Its old arcades and fountains and fine mediæval buildings take one back to the sixteenth century, while the modern homes and business buildings blend delightfully with the older sections.

**Agriculture in the Plateau.**—The plateau is far from ideal for agriculture, as it has an average elevation of some 1500 feet and is very hilly and irregular. Also most of the soils are poor, although in some sections glacial and loess deposits have materially increased fertility. Nevertheless, it is more favorably situated for farming than any



other portion of the country, as it contains the most level land, has the best climate, and is nearest to markets. Cultivation is best developed toward the southwest, where the more level areas are devoted to fields of grain, hay and tobacco, while the lower slopes support thriving vineyards. Toward the northeast the amount of cultivation declines, hay becomes of greater importance, and hardy fruit trees replace the vine. Everywhere cattle are in evidence, and dairying forms an important phase of agriculture.

**Manufacturing in the Plateau.**—Industrial development is centered largely in the northeast, where the outlets through Bavaria and the Rhine Valley provide the plateau with its best contacts with markets and industrial raw materials. There the manufacture of textiles, machinery and chemicals has grown rapidly, and has been largely responsible for Switzerland becoming the most highly industrialized nation in the world.

#### THE ALPS

The mighty snow-capped ridges of the Alps cover half of the country, and are the most characteristic feature of the Swiss landscape. In the west the mountains are narrow and high, but they widen and become lower toward the east. They are youthful mountains, whose jagged crest line forms a mighty rampart separating the Swiss plateau from the plains of Italy. Many of the higher peaks are snow capped, and picturesque glaciers cling to their sides. The U-shaped glacial valleys contain numerous lakes, and delightful waterfalls tumble and splash down their precipitous sides. Magnificent peaks, snow fields, glaciers, lakes, waterfalls and forested slopes, and a quaint and kindly population have caused the Alps to become one of the world's most famous playgrounds.

Fortunately, many of the rivers, in cutting their valleys back to points of maximum precipitation, have facilitated transverse communication. This is illustrated around Mont St. Gotthard, which is the hydrographic center of the country. Here are to be found the headwaters of the Rhine, the Rhône, the Reuss and the Ticino. The first two have cut long, narrow, east and west valleys which make communication possible through the heart of the Alps. The latter two provide north and south communication, and carry the rail lines which pass through the St. Gotthard Tunnel and connect Italy with northern Europe. A little to the west the Simplon Tunnel carries other rail lines

connecting the upper Rhône Valley with the Po Basin. Numerous other passes exist, but these two are the most extensively used at present. The Alps thus retard but do not prohibit communication between Switzerland and Italy. Were it not for the action of the rivers and the glaciers, cross communication by road or railroad would be very difficult.

Many of the Alpine valleys are quite isolated, and in these the population tends to preserve old customs and ideas. Thus the Romanisch dialect of the Canton of Graubünden (Grisons) is not found elsewhere



In the summer Swiss cattle find excellent forage in the high mountain pastures. (Courtesy of the Swiss Federal Railroads.)

throughout the world. The peoples of the narrow valleys frequently have distinctive costumes which are worn especially on festive occasions, yet these mountain people are all bound together by common interests arising out of a response to a common environment. Their interests frequently conflict with those of the city dwellers, and this leads to a rivalry which is an interesting feature of modern Swiss life.

Dairying is the principal source of livelihood of the majority of the mountain people. Material is rapidly eroded from the higher slopes and distributed over the rock shelves below the snow line. The summer rains moisten these fertile soils, and give rise to a luxuriant growth of grass and Alpine flowers which are most nutritious and

provide valuable fodder for livestock. These are the real "Alps," or mountain pastures on which the cattle are grazed during the summer. Here the herders live in simple shelters, tending the cows and making cheese and butter which at intervals is taken down to the valleys. During the winter the cattle are brought down to the permanent settlements on the valley floors and fed on hay which has been industriously collected during the summer. This transhumance is an established custom in many sections of the Swiss Alps, and contributes materially to the success of dairying. Cultivation is of slight importance in the mountains. Hay and a few hardy crops may be raised around the valley settlements or homesteads, but little if any cultivation takes place above an elevation of 3000 feet.

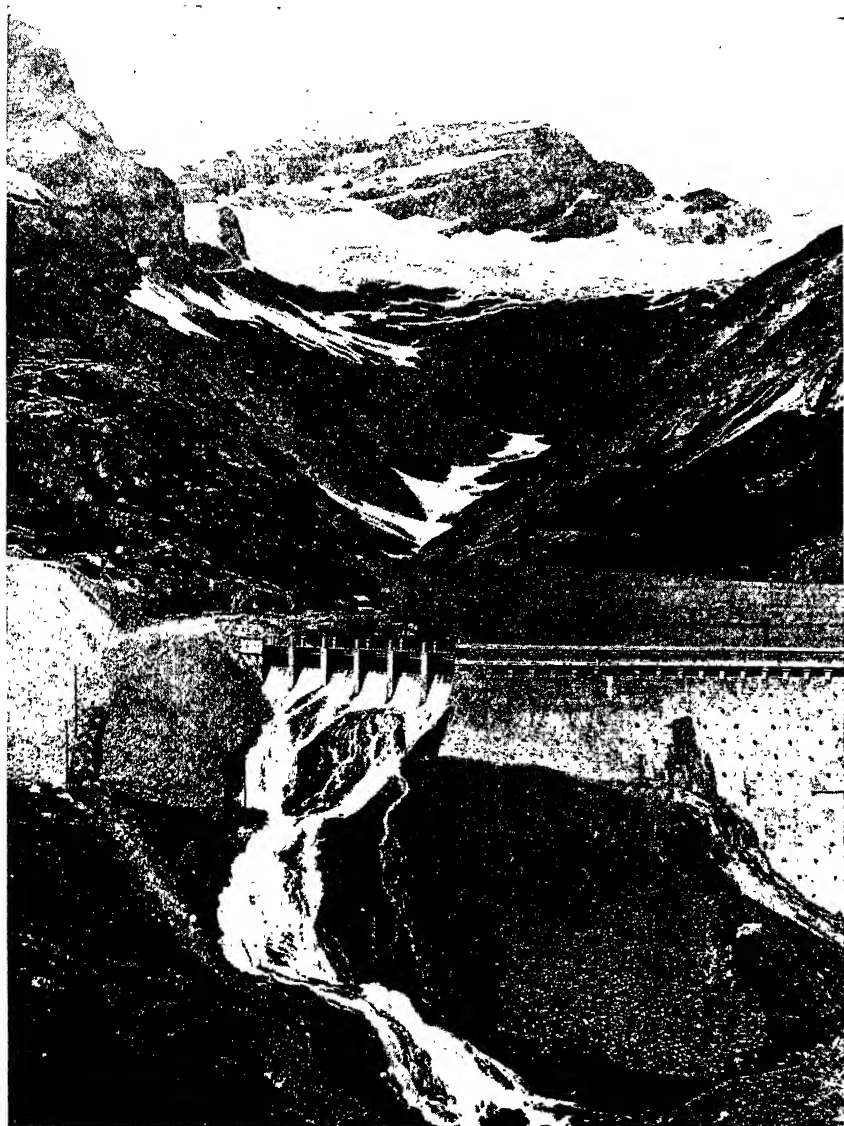
**Water Power.**—The picturesque waterfalls and the rushing mountain streams not only add to the scenic beauty of the Alps but give rise to the most valuable industrial resource of Switzerland—water power. Isolation and a sparse population cause this power to be only slightly used within the mountains themselves. Most of it is transported in the form of electricity to the cities of the plateau, where it is used as the motive power of a wide variety of industries.

The absence of coal or other fuel resources causes the energetic Swiss people to make extensive use of this resource. The extent of its use may be seen from the fact that today Switzerland is tied with France for fifth place among the world powers in developed water power, and is exceeded only by Canada and Norway in the output of electricity per capita.

The use of electricity enters into nearly every phase of Swiss life. Over 90 per cent of the nation's homes are lighted by electricity, and in some cantons every house is so served. More than two-thirds of the railway mileage is electrified, and it is planned to complete the electrification of the entire system within a short time. Nearly 98 per cent of all industrial machines are run by electricity, and in addition Switzerland exports considerable amounts of this power. Truly the Swiss have made excellent use of their one great industrial resource.

**The Sunny Southern Slopes.**—The southern slopes of the Alps present conditions radically different from those found in any other section of the country. The vineyards which clothe the sun-bathed slopes, the warm waters of Lakes Maggiore and Lugano, and the Italian speech and culture belong to the Mediterranean rather than to central Europe. The manufacture of silk and leather is of some importance in Lugano, but for the most part the inhabitants of this canton

are engaged in agriculture and in catering to tourists. Some dairying is carried on, but most of the agricultural interest centers around the

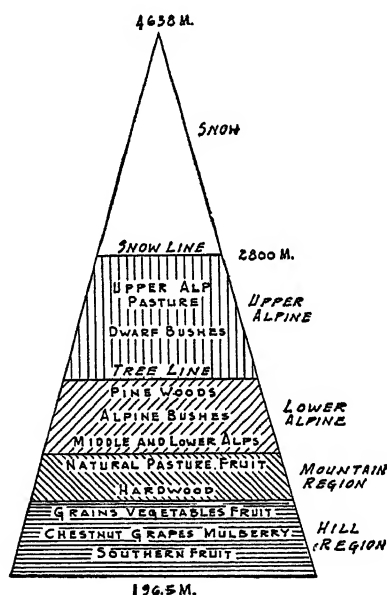


Water power is the only important industrial resource of Switzerland. Nevertheless, the nation exceeds all others in the proportion of its population engaged in manufacturing. (Courtesy of the Swiss Federal Railroads.)

raising of fruits and vegetables of a Mediterranean type. The recreational advantages of the section are great. There is no more delightful lake in Europe than Maggiore. The snow-capped battlements of the

Alps are reflected in its warm waters, while to the south the plains of Lombardy stretch to the Apennines. It is little wonder that Locarno is famed as a resort center. Ticino is of strategic importance, for it protects the southern approach to the St. Gotthard Tunnel, thus giving Switzerland complete control of that most important of all transalpine routes.

**The Tourist Industry.**—In the Alps nature has provided an ideal playground, with glaciers, snow-capped peaks, forest-bordered lakes



Land use as related to altitude on the slopes of the southern Alps in Switzerland.  
(After A. Spreng.)

and picturesque waterfalls. The Swiss have exploited these natural advantages by means of an improved transportation system, by excellent advertising, by the construction of up-to-date hotels, and by a system of training which produces the finest hotel managers and employees in the world. As a consequence, tourist expenditures bring in annually from \$75,000,000 to \$100,000,000, which is nearly enough to counterbalance the usual unfavorable balance of trade. The tourist industry has the additional advantage of utilizing the mountainous sections which are least valuable for agriculture or manufacturing. So closely is this activity tied up with agriculture, commerce, transportation and even manufacturing, that a poor tourist season raises serious problems for the entire country.

## AGRICULTURE

Topography and climate so restrict agriculture that Switzerland is unable to produce sufficient food to supply the needs of its people. There is little possibility of increasing the acreage of arable land, so that the crop yield can be increased only by higher returns per acre.



The collection of hay to tide the cattle over the winter is one of the principal occupations of the mountain peasants. (Courtesy of the Swiss Federal Railroads.)

Even this possibility is limited by the small size of the Swiss farms, which average less than 15 acres in extent, and by the intensive character of the present cultivation. Accordingly Switzerland is likely to remain dependent upon outside sources for a considerable portion of its food supply.

Although a variety of crops such as wheat, oats, rye, tobacco, corn, tree fruits and the vine are raised, potatoes form the only major crop in which the country even approaches independence.

**Dairying.**—The cool, moist climate and rugged relief, while unsuitable for most crops, are excellent for grass, and some 41 per cent of the entire country is in permanent meadow and pasture. These pastures are used to capacity at present for the support of large numbers

TABLE 99  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS IN SWITZERLAND  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Production (thousands of units— bushels, except as indicated)	
	1909-1913	1926-1930	1909-1913	1926-1930
Wheat.....	105	176 <sup>a</sup>	3,447	5,592 <sup>a</sup>
Oats.....	81	50	4,784	2,888
Rye.....	60	49	1,855	1,605
Barley.....	13	16	441	552
Potatoes.....	115	119	24,900	24,952
Grapevines.....	59	35	11,842 <sup>b</sup>	15,348 <sup>b</sup>

<sup>a</sup> Mixed grain and spelt included with wheat.

<sup>b</sup> Unit, gallon of wine.

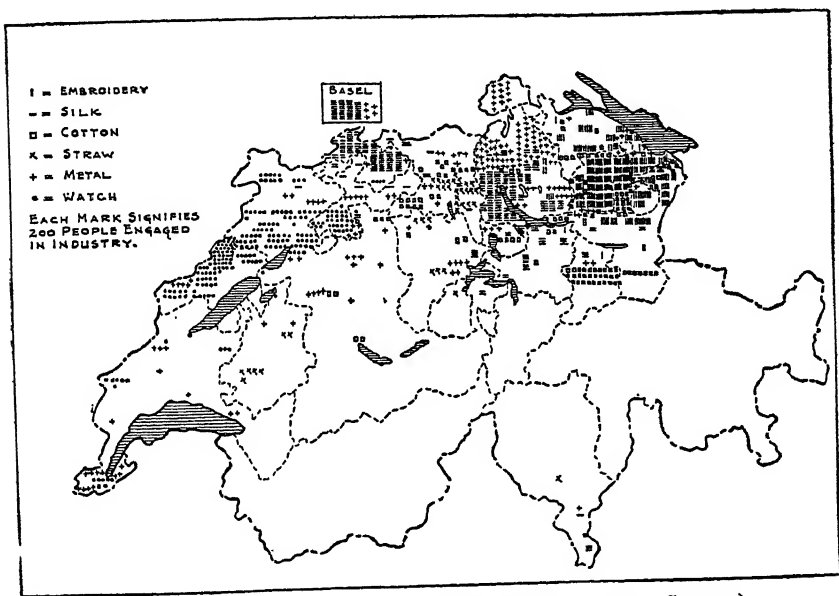
of dairy cattle and a smaller and declining number of sheep and goats. Dairying has thus become the most important phase of Swiss agriculture, and the only one which produces any surplus for export. The isolation of many of the valleys has caused the dairyman to specialize in the production of cheese and condensed milk, rather than butter or fresh milk. Dairying is to be found in all portions of the country, but the largest proportion of pasture land occurs in the northeast, in the Cantons of St. Gallen and Appenzell. In the Alpine valleys cheese is the principal dairy product. However, the plateau supports more cattle than any other division of the country, and there, in addition to cheese, large amounts of condensed milk and milk chocolate are prepared at such cities as Bern and Luzern. Dairying is also the most important activity of the valleys of the Jura, and the products from this region are marketed through Neuchâtel.

As there is little possibility of the country supporting more live-stock, a decided effort is being made to increase milk production by improving the quality of the cattle. Progress is being made in this direction, and at present Switzerland is surpassed only by Denmark and The Netherlands in the milk output per cow.

After meeting the home demand for dairy products, considerable quantities remain for export. For the most part, these are sent abroad in the form of cheese, condensed milk and milk chocolate. Careful inspection and great attention to quality have caused them to be in wide demand. Such exports have a combined value of some \$30,000,000 yearly.

# MANUFACTURING

Nothing better illustrates the capacity of the Swiss people than the fact that they have made their nation more highly industrialized than any other in the world, despite its landlocked position and its lack of raw material. Some 44 per cent of the working population are engaged in manufacturing, and they produce articles which are exported to every corner of the world. The only industrial assets which the nation has are its able population and its abundant water power. Excellent



The distribution of industries in Switzerland. (After A. Spreng.)

use has been made of both of these. The former turns out articles which have a world-wide reputation for their excellence, while the latter provides an abundance of cheap and efficient power.

The factory system is a comparatively recent development in Switzerland. Prior to the World War, the country depended largely upon household industries. Wood carving, embroidery and the manufacture of clocks, watches and jewelry were carried on in the homes. Factories found it difficult to compete with the large-scale industries of countries better endowed with fuels and raw materials. However, conditions during the war assisted the country to utilize its skilled labor in the production of quality goods. As a consequence, the factory



system rose rapidly, and was accompanied by important changes in the distribution of population and in the habits of the Swiss people.

**Industrial Products.**—Textiles, especially cotton and silk, form the most important products of Swiss industry. The only natural advantages enjoyed by this type of manufacturing are the moist climate and the abundant water power, but the principal factor responsible for its importance is doubtless the abundance of highly skilled labor. Embroidery and various textiles had long been produced in the homes, so that trained workers were available when factory production began. Today the textile industries are largely localized in the northern and northeastern portions of the country. Embroidery, in which Switzerland leads the world, remains in part a household industry. The manufacture of cotton goods employs more workers than any other branch of the textile industry, and is especially important in Zürich, St. Gallen, Aargau and Glarus. Silk fabrics are manufactured in large amounts in Zürich, Basel and adjoining territories. The major portion of all textiles are produced for export, over 90 per cent of the silk and embroidery and 60 per cent of the cotton yarn and fabrics being sold abroad.

The manufacture of clocks, watches and jewelry is carried on in more than 1000 small factories scattered through the western section of the country. A remnant of the handicraft days still remains, as some of the parts are frequently made in the homes. The government aids the industry in maintaining quality by thorough inspection of the better products and by the establishment of excellent technical schools. Switzerland ranks as the leading country in the export of clocks and watches, and sells abroad some 92 per cent of all the watches produced.

The manufacture of machinery is of growing importance, despite the fact that aluminum is the only metal which Switzerland produces in any quantity. This industry has been largely a response to local needs, textile and electrical machinery being the most important types produced. The centralization of this form of manufacturing around Zürich has done much to make this the principal industrial city of the country. Switzerland holds a world-wide reputation for the quality of the electrical machinery which it produces, and this machinery is exported in large quantities.

The chemical industry centers in Basel and is of increasing importance. Prior to the World War, Switzerland ranked second to Germany in the manufacture of aniline dyes. Although it has since been surpassed by the United States and Great Britain, it still produces 7 per

cent of the world supply and exports 90 per cent of the amount produced.

### TRANSPORTATION

The mountainous character of Switzerland makes the construction and maintenance of roads and railroads difficult and expensive. In spite of this handicap, the central location of the country, its position on the transalpine routes, and its dependence upon foreign trade and the tourist traffic, have caused transportation facilities to be unusually well developed.

Switzerland has a greater mileage of railways in proportion to its population than any other European nation, except Belgium and the United Kingdom. The plateau, having the most favorable relief and containing the greatest population, naturally has the densest rail net, but even the mountain districts are well served, and some of these mountain railways are wonderful examples of engineering skill. The Swiss railroads are connected with those of all the bordering nations. Basel is especially important in this connection, because upon that city converge lines from Frankfurt, Hamburg, Rotterdam, Anvers and Paris. The lines from the Rhône Valley enter through Genève, those from Bavaria through Schaffhausen, and those from Austria through Sargons. Toward the south the Simplon and St. Gotthard Tunnels

TABLE 100  
LENGTH AND ELEVATION OF PRINCIPAL ALPINE TUNNELS<sup>1</sup>

Tunnel	Length (yards)	Elevation (yards)
Simplon.....	21,657	770
St. Gotthard.....	16,493	1,262
Lötschberg.....	15,888	1,360
Mont Cenis.....	14,034	1,415
Arlberg.....	11,192	1,432
Ricken.....	9,403	680
Münster-Grenchen.....	9,356	597
Hauenstein.....	8,907	494
Mont d'Or.....	6,666	879
Albula.....	6,409	1,995
Weissenstein.....	4,044	789
Wasserfluh.....	3,888	718
Albis.....	3,672	565
Jungfraubahn.....	3,585	3,455

<sup>1</sup> Spreng, A., *Wirtschaftsgeographie der Schweiz*, Geographischer Kartenverlag, Kummerly & Frey, Bern, 1925.

provide contacts with Italy. These rail lines have not only played an important part in Swiss trade and in the tourist industry, but they add materially to the national income through the sums collected for carrying transit goods for other nations.

The country also has an excellent system of automobile roads connecting centers of population, and leading to all major points of interest. Some of the mountain roads not only present magnificent views, but are among the finest examples of the road builders' art.

The rugged topography of Switzerland offers fewer handicaps to aviation than to other forms of transportation. Consequently, it is not surprising that commercial aviation has increased with remarkable rapidity. In 1930 over 1,000,000 miles were flown by passenger planes.

The mountainous character of the country decidedly limits water transportation. The Aar is used for local navigation, but its shallowness and winding course restrict its use.

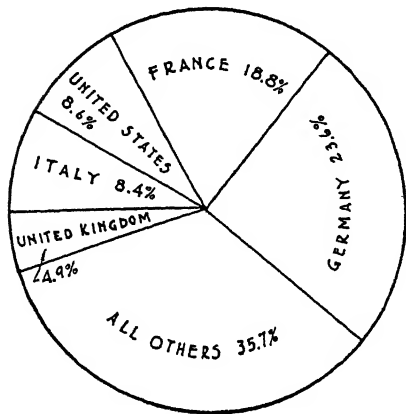
The Rhine provides a navigable waterway from Basel to the sea. However, the speed of the current and the rock bar of Istein make navigation difficult and costly above Strasbourg. As a consequence, the river traffic of Basel is small and fluctuates widely from year to year. Thus in 1921 no goods entered or left the port, while in 1924 some 286,000 tons were handled. The greater part of the traffic between Basel and the sea moves by rail between that city and Strasbourg or Mannheim, where it connects with river transportation, while some moves directly by rail between Basel and Anvers or Rotterdam.

### FOREIGN TRADE

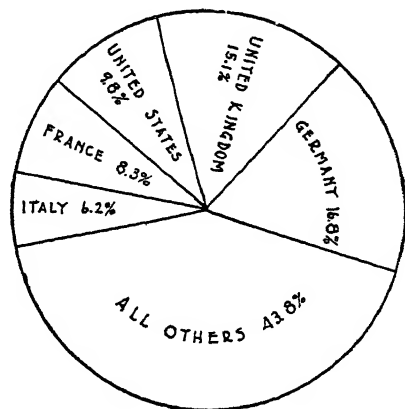
The necessity for importing foods and raw materials and for exporting manufactured goods has caused the active Swiss to develop a large foreign trade. For the five-year period 1926-1930, Switzerland had an average annual foreign trade of \$868,000,000, or \$213 per capita. Denmark and The Netherlands alone among the European nations exceeded this per capita amount. What a tribute this is to the landlocked little country, with its poverty of resources!

As would be expected of a nation of this type, some 57 per cent of all imports are foods and industrial raw materials, while 81 per cent of all exports are manufactured goods. Machinery, coal and coke, and wheat are the three leading imports, while machinery, textiles and watches are the leading exports. Neighboring countries, especially Germany and France, rank high as markets and as sources of raw

materials, although a surprising amount of trade is carried on with the United Kingdom and with such overseas areas as the United States, the Argentine and Japan. Normally the nation has a fairly large unfavorable balance of trade which must be counterbalanced by tourist expenditures, the return on foreign investments and income from transportation and banking services.



Sources of Swiss imports; average, 1926-30. Percentages of total imports. (U. S. Department of Commerce.)



The destinations of Swiss exports; average, 1926-30. Percentage of total exports. (U. S. Department of Commerce.)

The dependence of Switzerland upon foreign trade has made it keenly interested in the recent tendency toward economic nationalism. The heightening of tariff barriers by the various world powers has seriously handicapped Swiss trade, and has consequently interfered with the nation's prosperity.

TABLE 101  
PERCENTAGE OF TOTAL IMPORTS ENTERING THE  
VARIOUS SWISS CUSTOMS AREAS, 1927<sup>1</sup>

Customs Area	Percentage of Total Imports Entering
Basel.....	39.2
Genève.....	19.3
Schaffhausen.....	19.2
Lausanne.....	8.2
Chur.....	7.5
Lugano.....	6.6
Total.....	100.0

<sup>1</sup>Geering, T., and Hotz, R., *Wirtschaftskunde der Schweiz*, Druck und Verlag von Schulthess & Co., Zürich, 1929.

## BIBLIOGRAPHY

- Der Schweizer Geograph*, edited by F. Nussbaum, published monthly by Geographischer Kartenverlag, Kümmerly & Frey, Bern.
- Fruh, J., *Geographie der Schweiz*: vol. 1, *Natur des Landes*, vol. 2, *Volk, Wirtschaft, Siedlung, Staat*, Buchdruckerei Zollikofer & Cie., St. Gallen, 1932.
- Geering, T., and Hotz, R., *Wirtschaftskunde der Schweiz*, Druck und Verlag von Schulthess & Co., Zürich, 1929.
- Groves, H. L., "Switzerland, a Commercial and Industrial Handbook," *Special Agents Series*, No. 210, U. S. Department of Commerce, Washington, 1921.
- Hurlimann, M., *Die Schweiz; Landschaft und Baukunst*, Atlantis-verlag, Berlin, 1931.
- Jones, C. L., "Switzerland, Resources, Industries and Trade," *Trade Information Bulletin* No. 421, U. S. Department of Commerce, Washington, 1926.
- Spreng, A., *Wirtschaftsgeographie der Schweiz*, Geographischer Kartenverlag, Kümmerly & Frey, Bern, 1925.

## THE REPUBLIC OF AUSTRIA (ÖSTERREICH)

MOUNTAIN-CROWNED guardian of the Upper Danube, Austria, like Switzerland, is primarily an Alpine state, and lies athwart some of Europe's most important trade routes. It differs from Switzerland, however, in that its history has not been that of a gradual adjustment to its mountain environment. Instead, the country is a recent fragment of a once mighty empire. It was cut asunder, and turned adrift in the sea of economic nationalism which followed the World War. Since then its course has been beset with difficulties, many of which arose outside of its own borders. Austria's problems have been so great that a serious question has been raised as to its ability to exist as an independent state.

## HISTORY

Austria as an outpost of western Europe has had a long and varied history. In 803 Charlemagne here founded the Östmark (East Mark) on the eastern boundaries of his empire, as a protection against the Avars. Following its destruction by the Magyars, it was rebuilt by Otto I, and had a varied career until it came under the control of the Hapsburgs in 1278. From that time until 1918 its fate was closely allied with the fortunes of that family. Through marriage, treaty and conquest the Hapsburgs extended their domain until, under Emperor Charles V, they became the most powerful ruling family in the world. Gradually, however, portions of their territories drifted into other hands, but until its defeat by Prussia in 1866 Austria remained the most powerful German state, and the center of German culture.

Just prior to the World War, the Austro-Hungarian Empire was a polyglot state consisting of a number of groups differing in race, religion, culture and history. Dissatisfaction was growing among these groups, who were demanding an increasing degree of local autonomy. The Hapsburgs met these demands by traditional measures of autocratic repression. The defeat of the Empire in the World War gave these peoples their opportunity, and they quickly withdrew and organ-

ized separate states. Thus the Rumanians of the east joined Rumania, Hungary declared itself completely independent, the North Slavs united to form Czechoslovakia, and the South Slavs joined with Serbia to form Yugoslavia. There remained only the German-speaking portion of the Empire to be molded into the Republic of Austria. This included about one-fourth of the area and population of the former Kingdom of Austria. Even some of the German groups were included in Italy and Czechoslovakia, and today constitute minorities which remain as disturbing factors in European politics.



Outline map of Austria.

Although the Austro-Hungarian Empire was a monstrosity from a political or ethnic point of view, it performed a valuable economic function. Palacký, the Bohemian patriot and historian, was the author of the famous saying, "If there were no Austria it would be necessary to create one," for the Empire brought economic unity to the Middle Danube. It linked the rich grain lands of Hungary with the industrial areas of Austria and Bohemia. It also united Bohemian coal and Austrian iron, and encouraged every portion of its far-flung domains to exchange their products without the interference of trade barriers. Great ports were built at Trieste and Fiume to facilitate overseas trade. From Wien and Budapest a network of railways served every portion of the Empire, as did likewise the great banking and commercial houses of Wien. Economic unity was thus achieved and, despite the reactionary policies of the Hapsburgs, a considerable degree of prosperity resulted.

The break-up of the Empire disrupted this unity. Each of the new states was fearful of the restoration of Austrian power and jealous of the commercial supremacy of Wien. They were also pervaded by a spirit of intensive nationalism, and immediately surrounded themselves with high tariffs and other trade barriers. The economic unity of the Middle Danube thus disappeared. The Republic of Austria especially was injured by this change. Primarily a mountainous land, it was unable to produce enough food to support its population. In addition to food, it was necessary to import coal and numerous industrial raw materials. These imports could only be paid for by exports, but Austria was cut off from its normal markets by trade barriers. As a result, imports greatly exceeded exports, and the nation had to borrow to meet this unfavorable balance. Only financial aid from the League of Nations and some of the larger European powers has saved Austria from complete bankruptcy. This unfortunate situation has increased the desire of many Austrians to unite with Germany. Unless Austria's former markets are opened to its goods, some such union will be necessary for, in spite of the fact that it has geographical advantages at least as great as those of Switzerland, it will be bankrupt long before these advantages can be exploited or organized. Fortunately, it seems likely that economic self-interest will force the other Danube states to change their policies, and will reestablish something of the economic unity which existed under the Empire. If this is done, Austria has the possibilities of achieving a moderate amount of prosperity within its present boundaries.

### POPULATION

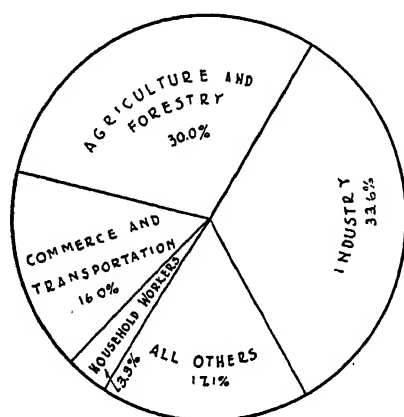
Over 97 per cent of the Austrian people are German-speaking, and are closely related to the Bavarians in race and culture. Good humor, kindness and love of comfort are among their most common characteristics. They are a delightful people and have contributed much that is worth while to cultural life; but their economic contributions have been less marked than those of the tenacious and hard-working Germans.

There are today two distinct groups within Austria who differ culturally and politically. The people of Wien have a character all their own, shaped by the paternal policies of Metternich and Francis Joseph, and by citizenship in a great imperial capital. Under the Empire everything was done to make their life easy and pleasant, and they were discouraged from taking an interest in political affairs. The ease of



their past life, their vivacity and their fatalistic outlook render it hard for them to adjust themselves to the new conditions under the Republic.

The population of upland Austria has been influenced by its isolation and its difficult environment. Like many mountain peoples, they are backward, extremely conservative and often intolerant, but on the other hand they are very hard-working and preserve that sturdy independence of character so well typified in Andreas Hofer. They are among the most intensely religious people in Europe, and religion enters into all phases of their everyday life. In the more remote Alpine valleys many ancient groups and customs are preserved. Within the lonely parts of Salzburg and Tyrol the Perchten still dance their pagan



Occupations of the gainfully employed population of Austria. Percentages of total employed. (*Austrian Yearbook, 1931.*)

measures on the Twelfth Night, and superstitions and charms from the Dark Ages still linger. In politics these mountain peoples are conservative, in contrast to the socialistic tendencies of Wien. The four largest Alpine provinces, Tyrol, Salzburg, Carinthia and Styria, have had long and proud histories of their own, and the patriotism of their people is often provincial rather than national.

The non-German-speaking groups are most numerous in Burgenland. This province, which was detached from Hungary and given to Austria by the peace treaties, is more Hungarian than Austrian in its levelness and in the character of its people. In addition to Magyars, it contains numerous communities of Croats.

In 1930 Austria had an estimated population of 6,713,000, or 207 per square mile. This is a population approximately equal to that of Massachusetts, Connecticut and Rhode Island combined, and is in an

area about equal to that of the State of Maine. Wien itself contains nearly one-third of the people of the entire country, and thereby creates serious problems. The more level eastern portion of the nation contains the most dense population, although in such Alpine valleys as the Inn, the Enns, the Drava and the Salzach there are local areas where the density is great.

Wien, Graz and Linz are the only cities with a population of over 100,000, although some 50 per cent of the entire population lives in towns and cities of 2000 or more.

### SITUATION

Austria occupies nearly as important and strategic a location as does Switzerland. It has always been a meeting place of peoples. Once the boundary between the "Land of the Crescent" and the "Land of the Cross," it bore the brunt of the Turkish invasion. Even today it marks the meeting place of the German, the Magyar, the Czech, the South Slav and the Italian. Here the cultures of these groups mingle, and each has added its contribution to Austrian life. It is likewise a southeastern outpost of western European culture and economic activity. Its music, art, literature, religion and interest in industrial activity are typical of western Europe, while to the east the Slav and the Magyar draw a portion of their culture from Asia and are more interested in agriculture and the exploitation of raw materials than in industry.

Austria's control of the Brenner and the Danube routes makes its location of great commercial importance. The Brenner is the lowest and perhaps the most famous of the Alpine passes. The valleys of the Adige and the Inn provide easy approaches, and at no point does the pass attain an elevation of 5000 feet. Across it marched the Roman legions, and through it descended the northern barbarians to lay waste the Empire of the Cæsars. Today it is one of the most important commercial links between Germany and Italy, and the absence of tunnels makes its use profitable.

The Danube Valley has always been the most important route between northern and southeastern Europe. It was the path followed by the fierce hosts of Asiatic horsemen intent upon the sack of western Europe. Down it moved the Crusaders to hold back the Turk and lay siege to Constantinople. Today rail lines follow the paths of the Huns and the crusading knights, and over them pass the grains and raw materials of the southeast and the manufactured goods of the north-

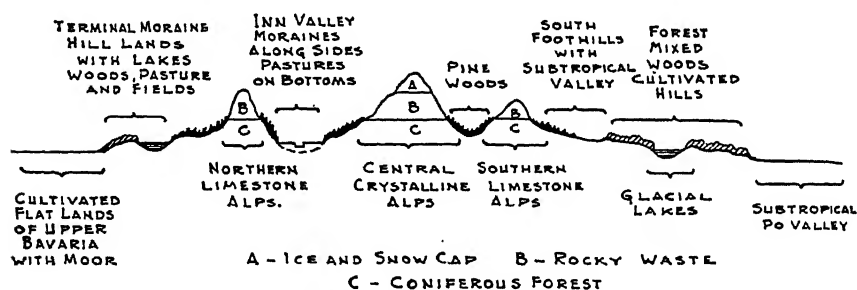
west. The river itself is extensively used for navigation, and helps to link together its bordering territories. Guarding as it does the gateway where the river leaves the mountains to enter the Hungarian plain, Austria occupies an extremely strategic position. Today the Danube serves so many countries that it has been internationalized, and the commission which controls it is located at Wien.

### GEOGRAPHICAL REGIONS

The Alps are the dominant relief feature throughout most of Austria. As a consequence, over two-thirds of the country has an average elevation of over 3000 feet, and less than one-quarter of the land is sufficiently level to permit cultivation. The only non-Alpine areas are a small extension of the Swiss-Bavarian plateau in the north, and a narrow fringe of the Danube lowlands in the east. Only in the latter are there any extensive sections of land suitable for agriculture.

### THE ALPS

Although the Austrian Alps are wider and lower than those of Switzerland, the same types of formations exist. A central crystalline



Cross section through the Austrian Alps. (After S. Passarge.)

core is separated by valleys from parallel limestone ridges on both the north and south. In the west the Austrian-Italian border runs along the crest of the central crystalline range, and the southern valleys and ridge are in Italy. To the east, in the province of Carinthia, the border shifts south to the crest of the southern limestone ridge, thus including both the northern and southern valleys in Austria. The longitudinal valleys of the north drained by the Inn, the Salzach and the Enns, and those of the south drained by the Mur and the Drava, are of great importance to the country. They provide east and west transportation

routes through the Alps, and are the sites of the chief centers of the Alpine population. On the other hand, the ridges hamper north and south communication, except where such passes as the Brenner and the Simmering occur.

All of the Alpine section drains toward the Danube, except the small western province of Vorarlberg, which is in the Rhine drainage basin and is connected with the rest of the country by the Arlberg Pass.

**The Western Alps.**—The western portion of the Austrian Alps resembles eastern Switzerland both in appearance and in human development. The green and fertile valleys of the Ill and the Inn are divided into small farms, on which the sturdy peasants raise corn, barley, tame hay, vegetables and fruits. In places the lower slopes are clothed with terraced vineyards which take advantage of the warm Föhn winds. However, the principal agricultural activity is dairying, and a type of transhumance similar to that of Switzerland occurs. Industrially, also, these sections resemble their western neighbor in utilizing their water power and native skill to manufacture cotton textiles. Embroidery, which is still largely a household industry, is important.

The valley floors are dotted with picturesque little towns with their brightly colored houses and ever-present church spires. As might be expected, the chief city of the region has grown up where an important north and south route crosses the east and west routes of the valleys. Such is the location of Innsbruck, the interesting capital of the Tyrol. Seated deep beneath its mountains and by the gray stream of the Inn, it has become important through its command of the crossroads where the Brenner route from Italy to Bavaria meets the valley highway from Switzerland to Wien. It is an old town with narrow streets, tall mediæval houses and arcaded pavements. However, it contains up-to-date textile factories, and its modern hotels bespeak the importance of the tourist industry.

Salzburg, the chief city of the province of that name, occupies a strategic position controlling the entrance to the upper Salzach Valley. Guarded by the ancient fortress of Hohensalzburg, it is a beautiful city. Here baroque architecture first came into Austria from Italy, and was used by the mediæval builders in fashioning local marble into magnificent buildings. The city is especially noted for its music festivals, which attract visitors from all portions of the world.

The western and central Alpine section is the center of the Austrian tourist industry. The magnificent mountain scenery of the provinces of Vorarlberg, the Tyrol and Salzburg rivals that of Switzerland. Although the mountains are not quite as high as those to the west, they

rise to an elevation of over 12,000 feet in the snow-clad summit of Gross Glockner. The whole range of the Hohe Tauern, a portion of the crystalline Alps, is high and picturesque. Crossing these mountains is a railway which is a masterpiece of engineering skill, and from the

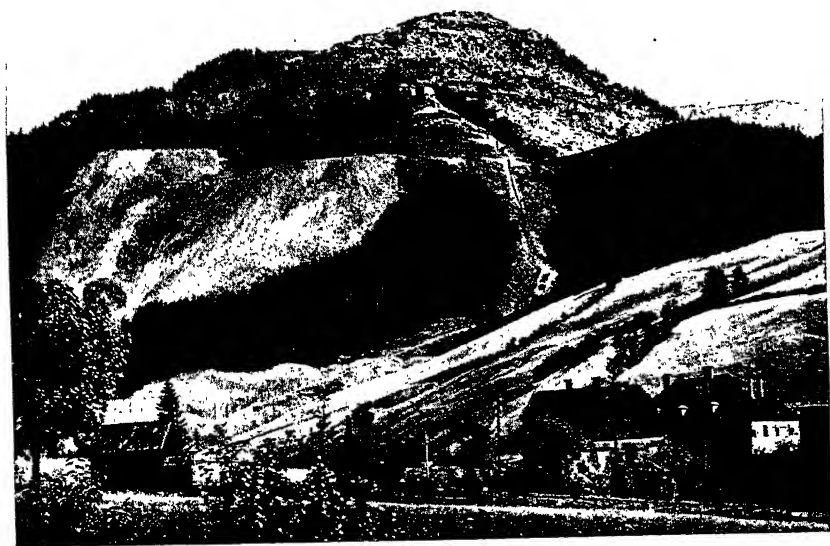


Innsbruck, capitol of the Tyrol. (Courtesy of the Austrian Tourist Information Office, New York.)

car windows can be seen some of the most magnificent mountain scenery in Europe. In the north central part of the country the beautiful lakes of the Salzkammergut are rapidly increasing in popularity. To the south the lakes of central Carinthia are justly noted for their beauty. Their blue depths reflect the wooded shore and mountain back-

ground, and make them one of the most delightful spots in the entire country. Although Austria is less well situated than Switzerland for tourists from such areas as the United States and Great Britain, it has numerous advantages which should make it an important recreational center. The Austrians have begun to recognize the possibilities of exploiting the natural beauty of their country, and are laying plans to increase their national income materially by attracting more tourists.

**The Eastern Alps.**—To the east the Alps are lower, with wide valleys and little waste land. Thus 25 per cent of the Tyrol is waste,



Open iron mine in the Erzberg Mountains. (Courtesy of the Austrian Tourist Information Office, New York.)

while in Styria, which lies to the east, 50 per cent of the area is forested, 20 per cent is in pasture, 20 per cent is under cultivation and only 10 per cent is waste. The peasant farmers of the wide valleys of the Danube, the Enns, the Mur and the Drava raise such grains as oats, rye, wheat and corn, besides devoting considerable attention to orchards and vineyards. Many animals graze on the lower slopes, but they play a less important part in agricultural economy than they do to the west. Here the farms are larger, and the numerous little agricultural villages are more prosperous than in the more rugged regions. This is the result not only of a greater amount of level land, but also of the richer soil which is especially abundant in the province of Upper Austria.

Greater natural resources and closer contacts with markets and

sources of imported raw materials have made the eastern Alps the home of the leading industries of Austria. Graz, located on the great south bend of the Mur, has become the center of the Austrian iron and steel and machine industries. Near at hand are the rich iron deposits of the Eisenerzer Alps (the Iron Ore Alps), and lignite is mined around Leoben and Graz itself. The whole Enz Valley is dotted with little industrial towns, but Graz is the center of this metallurgical district, and its large industrial population places it second among the Austrian cities in size. In the north iron ore, lignite and salt are mined along the Alpine foreland in Upper Austria. To the south, in Carinthia and southern Styria, iron, lead, zinc and magnesite are mined, and nearly every mining district supports industries using the particular mineral produced. The extensive forests and abundant water power of Styria and Upper Austria have made them important centers for the manufacture of pulp and paper. Depending upon imported raw materials, the textile industries are best developed in Lower Austria. These numerous industries, combined with better conditions for agriculture, have caused the eastern Alps to be more densely populated than those of the western and central portions of the country.

#### THE DANUBE LOWLANDS

The Danube lowlands contain the largest areas of level land in Austria, and consequently form the agricultural center of the country. The continental climate and their levelness have made them important grain lands, and wheat, rye, oats and corn are raised. Throughout Upper and Lower Austria the Danube Valley itself is narrow, but to the north of the river lies a typically Bohemian area which contains a considerable amount of good agricultural land. More than one-third of each of these provinces is cultivated, and most of this land lies in or to the north of the Danube Valley. Cereals and hay are the chief crops raised, although excellent vineyards occupy the south-facing slopes.

To the east the valley opens out in the small but fertile plains of Wien. Here the demands of the city population lead to the production of truck and fruit crops, as well as grain. After leaving the Wien Basin, the river enters the Hungarian plain; and here, in the newly acquired province of Burgenland, is the greatest area of level, rich land in Austria. The mixed population of Austrians, Croats and Hungarians carry on a more extensive type of agriculture than is to be found in the rest of the country. Most of the land is devoted to cereals. Cattle and horses are found on each farm. The picturesque costumes

of the peasants, together with their homes and methods of agriculture, remind one more of Hungary than Austria.

The Danube Valley is also of major importance as an east and west transportation route. Below Passau the river is extensively used for navigation, and serves as a unifying force linking together the various portions of its valley. Rail lines follow the valley and connect it with neighboring areas, and it is consequently not surprising that along the Danube are to be found two of the three Austrian cities which have a population of over 100,000. Linz is the chief city of Upper Austria, and is the third largest city of the country. It is located on the Danube near the mouth of the Traun, and is an important river port. Rail lines connect it with Wien, Salzburg and Praha (Prague), thus assisting in making it the most important commercial city between Wien and the German border. Textile, paper and hardware manufacturing have added to its importance. Today it is a modern city, with but few reminders of its mediæval importance.

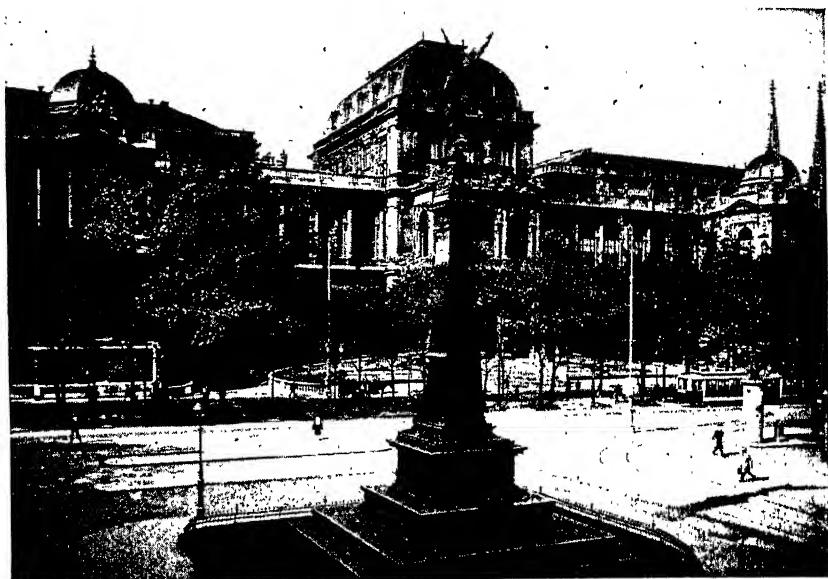
**Wien.**—Situated where the Danube leaves the Austrian gorge for the Hungarian plain, and at the eastern end of the Alps, Wien is the most delightful and most important city of the Danube Basin. The convergence of rail and water routes has made it of major commercial importance, and it was the logical site for the capital of the old Empire. These routes extend in all directions; the Upper Danube leads to Bavaria, while the Lower Danube provides a route to the rich grain lands of Hungary, Rumania and Yugoslavia. Toward the north the Morava Valley provides easy access to the Moravian Gate and the Baltic, and to the southwest across the Simmering Pass lies the road to Italy. In addition, the roads following the Alpine valleys from the west converge upon the city. Thus since its beginning as the Roman camp of Carnuntum, Wien has been the commercial center of the Middle Danube.

As the population grew, manufacturing also became important. In this phase of economic activity the city closely resembles Paris. Its artistic and highly skilled workmen have a world-wide reputation for turning out specialty products of the highest quality and artistic merit. Fine textiles, metal work, leather, furniture and musical instruments are a few of the products which have made Wien the leading manufacturing city of Austria.

The cultural accomplishments of Wien are as important as its economic activities. For generations the Hapsburgs encouraged leaders in all phases of cultural activities to come to their capital. Great artists, musicians, architects and scholars came and made their contribution



to the life of the city. A natural love of beauty made its citizens apt followers of these great artists. As a result, it soon became a city of artistic palaces, broad boulevards and magnificent public buildings. Its accomplishments in music, art and literature have been outstanding. It is little wonder that it became the cultural center of the German world. Much of the glory that was Wien's faded with the fall of the Empire, but its kindly and cultured people strive on and, in spite of poverty



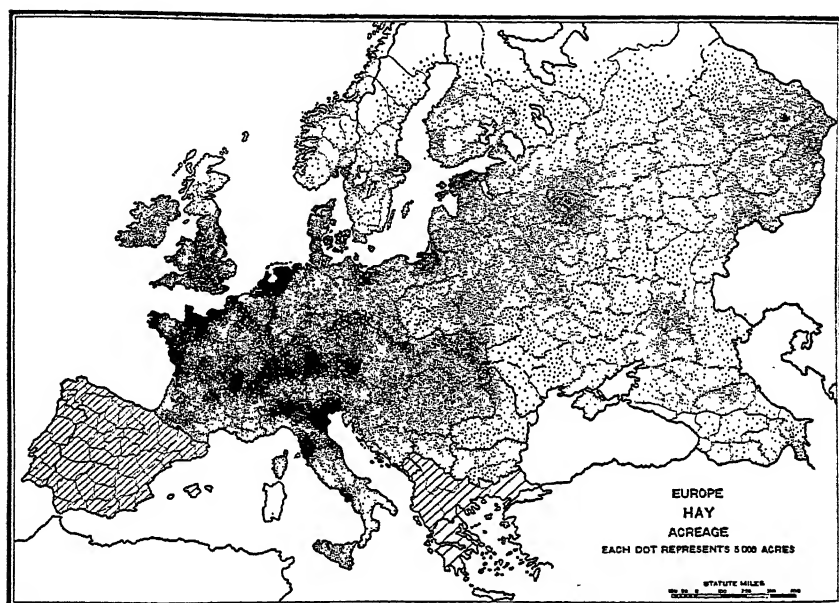
The University at Wien. (Courtesy of the Austrian Tourist Information Office, New York.)

and suffering, preserve that infectious gaiety and love of beauty which have so long been among their chief charms.

### AGRICULTURE

Numerous factors have combined to limit Austrian agriculture and to make the country dependent upon imports for an important portion of its food supply. As much of the nation is mountainous, only 23 per cent of its area is classified as arable land, and another 27 per cent is in permanent meadow and pasture. Prior to the World War, little attention was given to agriculture within the present boundaries of the Republic. Such other sections as the Hungarian plain and Bohemia contained lands much better suited for cultivation, and foods moved freely from these areas into the more mountainous regions.

Following the World War, the Republic was faced with the task of increasing its agricultural production so as to make itself as nearly as possible self-sufficient in foods. It was decidedly hampered in this effort by its economic position. The prices of agricultural products dropped to a point where the farmer could no longer make a profit; funds were not available for the purchase of necessary fertilizers, and currency inflation made the future uncertain. In addition, the strip system of agriculture, so common throughout the country, has served



The cool moist climate and rugged relief of the Alpine countries are unfavorable for many cultivated crops but encourage the growth of hay and the raising of livestock. (U. S. Department of Agriculture.)

to limit production, and, in spite of the efforts of the government to correct this evil, it is still common. Faced with these difficulties, Austrian agriculture declined rapidly during and immediately after the World War, and its recovery has been slow. Not until 1928 did production approach the pre-war level.

In spite of the fact that grains, especially rye, oats and wheat, take up some 62 per cent of the tilled area, and in spite of every effort to increase the crop yield, the country is and will continue to be dependent upon outside sources for a considerable proportion of these foods. The same is true of potatoes, despite the fact that the yield of this crop is considerably above the pre-war level. The production of sugar beets

has been increasing rapidly, and today provides sugar sufficient to supply 66 per cent of the domestic demand. There are large areas of Austria well suited for fruit raising, and it is hoped that the increasing attention being given to this phase of agriculture will result in a surplus for export. In 1930 the imports of live animals and foods were valued at some \$118,000,000, or 31 per cent of the value of all imports.

TABLE 102  
ACREAGE AND YIELD OF PRINCIPAL CROPS  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as indicated)	
	Average 1909-1913 (present boundaries)	Average 1927-1930	Average 1909-1913 (present boundaries)	Average 1927-1930
Rye.....	1,110	935	23,785	20,195
Oats.....	883	755	29,030	30,188
Wheat.....	635	508	12,813	12,111
Barley.....	421	393	10,065	12,134
Corn.....	190	143	4,530	4,642
Potatoes.....	436	464	53,373	94,469
Sugar beets.....	57	75	510 <sup>a</sup>	778 <sup>a</sup>
Grapevines.....	106	88	18,771 <sup>b c</sup>	16,871 <sup>b c</sup>
Clover.....	...	608	.....	1,553 <sup>a</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> Not including Burgenland.

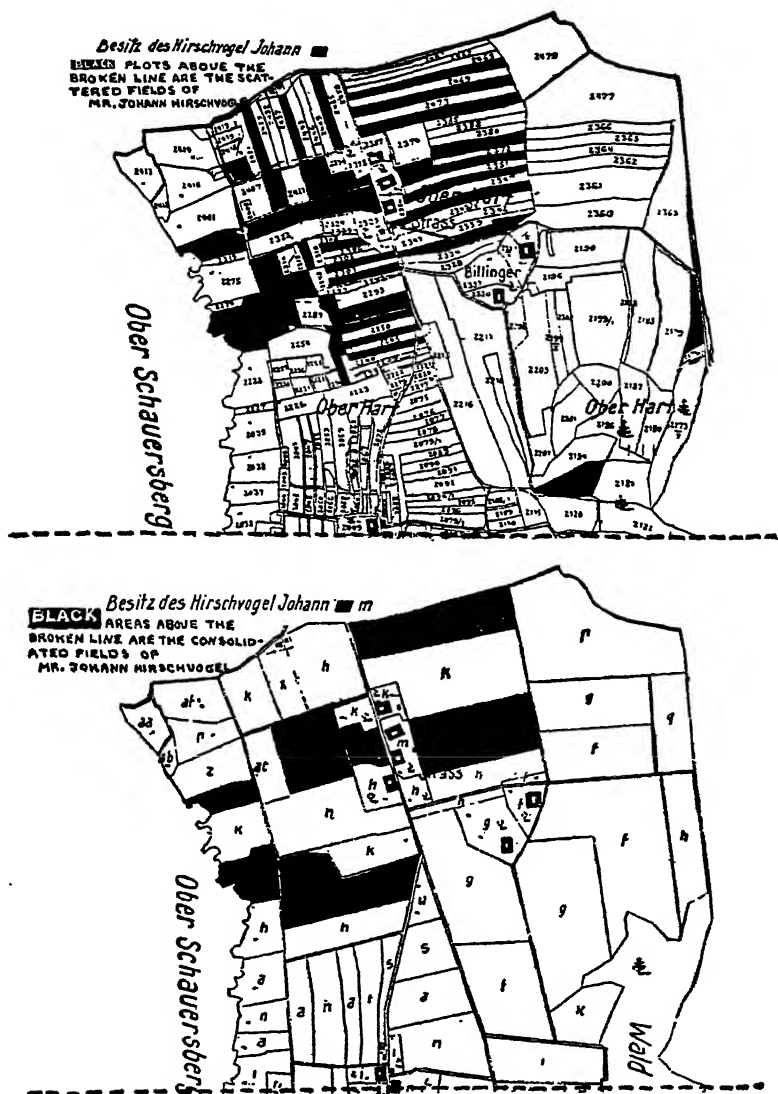
<sup>c</sup> Unit, gallon of wine.

The rugged character of much of the Republic makes it better adapted for livestock raising than for the raising of crops. Even where relief permits cultivation, increasing attention is being given to the animal industries, and dairying has been receiving special attention. The tendency to specialize in high-grade stock has resulted in milk production increasing 17 per cent from 1910 to 1930. Today the country has an exportable surplus of dairy products, and this surplus should expand materially in the future.

#### NATURAL RESOURCES

**Forests.**—Forests cover 37 per cent of the entire country, and constitute one of its most important resources. Most of the Austrian forests are situated at an elevation of 3000 feet or over, and some are so difficult of access that they are unused. The most productive sec-

tions are in the eastern Alpine provinces, because the percentage of forested land is greater and accessibility to transportation facilities is



Austrian farm before and after consolidation. The division of farms into numerous isolated fields is characteristic of many sections of Europe. In Austria, as elsewhere, efforts are being made to consolidate such holdings in order to make possible greater economy and efficiency in cultivation. (U. S. Department of Agriculture.)

best. Not only do these forests yield sufficient wood to supply most of the domestic demand, but they also provide the raw material for exports which were valued at more than \$50,000,000 in 1930.

**Iron Ore.**—Iron ore is mined in several portions of the Republic, and constitutes its most important metallic resource. The chief centers of production are in the Eisenerzer Alps, the Steirische Erzberg (Styrian Ore Mountains), and the Huttenberger Erzberg. The ore is moderately rich in iron, ranging from 36 to 40 per cent, but it is especially valuable because of the absence of sulphur and phosphorus. The annual production averages about 1,500,000 tons, and is sufficient to meet domestic needs and provide a surplus for export.

Copper, lead and zinc are also mined, but not in sufficient quantities to meet the needs of the country. On the other hand, Austria produces about one-third of the world's magnesite, and exports of this metal are sent to many sections of the world.

**Power Resources.**—Under the Empire, the abundance of mineral fuels in Bohemia, Moravia and Silesia caused little attention to be given to the exploitation of power resources within the present boundaries of the Republic. Following the peace treaty, however, it became necessary to exploit these resources to the maximum in order to reduce imports.

Austria has an estimated reserve of 500,000,000 tons of coal, but of this only 3 per cent is bituminous, the rest being low-grade lignite. Although these resources are being exploited to a far greater extent than prior to the war, the country was able to produce only some 2,982,000 tons of lignite and 228,000 tons of bituminous coal in 1931. As a result, large amounts of coal have to be imported, the value of these imports for the period 1927-1930 averaging \$32,000,000 annually.

The Alpine character of much of the Republic favors the development of water power, and this resource is being exploited as rapidly as possible in order to reduce the necessity for importing fuels. The Water Power and Electricity Board of the Federal Chancellery estimates the available water power that can be utilized at 3,400,000 horsepower. In 1918 Austrian hydro-electric plants had an installed capacity of 330,000 horsepower, and by 1930 this had been increased to 1,200,000 horsepower. This power is being utilized by the railroads and by the smaller industries, as well as for domestic purposes. The rapid increase in the development of this form of energy should strengthen the country economically by materially reducing the annual imports of coal.

## MANUFACTURING

Prior to the World War, industrialization was progressing rapidly in two portions of the Austro-Hungarian Empire. The most important

center was in the Bohemia-Moravia-Silesia district which now lies largely in Czechoslovakia. A secondary center was in the territories now included in the Republic of Austria. However, this section was dependent upon other sections of the Empire for much of its fuel and many of its raw materials, and the Empire likewise contained its greatest markets. Post-war trade barriers tended to isolate the Republic economically, and severely injured its industries. In spite of this, industrialization has increased, for the Austrians have realized that manufacturing is the only economic activity which offers any promise of providing employment for the population, or of making economically possible the continued independence of the state. The nation possesses certain advantages in the form of water power, timber, ore, a skilled population and a central location which should aid in the expansion of industry. If neighboring countries lower their trade barriers until Austrian industries can become established, the Austrians may well follow the example of the Swiss in the exploitation of these advantages, however such a lowering seems doubtful, at least, in the near future.

In spite of the lack of coal, the metallurgical industries occupy first place in Austrian manufacturing. The Styrian iron ore is turned into excellent steel, and this is used in the production of a wide variety of finished products. Electrical, textile and agricultural machinery, tools, automobiles and motor cycles are all produced in quantities more than sufficient to meet the domestic demand. The greatest concentration of such industries is in the valley of the Mur around Graz and Klagen-

TABLE 103  
INDUSTRIAL PRODUCTION IN AUSTRIA  
(U. S. Department of Commerce)

Industry	1913 (present boundaries)	Average 1926-1930	1931
Coal, 1000 metric tons.....	87	192	228
Lignite, 1000 metric tons.....	2,555	3,300	2,982
Iron ore, 1000 metric tons.....	2,031	1,538	512
Magnesite, metric tons.....	183,105	130,965	48,799
Crude steel, metric tons.....	565,000	564,094	322,357
Pig iron, metric tons.....	607,000	395,084	145,037
Wood pulp, metric tons.....	75,140	100,440	96,080
Cellulose, metric tons.....	121,360	204,040	210,060
Paper, metric tons.....	188,430	215,820	215,580
Cotton yarn, 1000 lbs.....	21,423 <sup>a</sup>	54,526	39,000
Beer, 1000 gals.....	80,311 <sup>a</sup>	138,273	105,249

<sup>a</sup> 1921.

furt. Industries turning out fine metal products are located in Wien and in other sections of eastern Austria.

The textile industries of Vorarlberg and the Tyrol are old and began as household industries, but those of Lower Austria are of more recent origin. Favored by excellent transportation facilities for the importation of raw materials, this section tended to specialize in spinning, and the present Republic contains 30 per cent of the spindles of the former Empire. However, it contains but 9 per cent of the looms, for weaving tended to centralize in Czechoslovakia where fuel and labor were more abundant. Thus there is an oversupply of thread and yarn and an undersupply of fabrics. Steps have been taken to remedy this situation, but such a readjustment will take time. While cotton is the most important textile used, the Republic also manufactures a considerable amount of silk. Finished products in the form of hosiery, lace and knit goods are important, and are receiving increasing attention.

Within recent years, those industries depending upon timber as a raw material have increased rapidly in importance. This has been especially true of the manufacture of wood pulp, cellulose and paper. The abundance of timber and the available water power are ideal for the development of these industries, which only await larger foreign markets to expand even more rapidly.

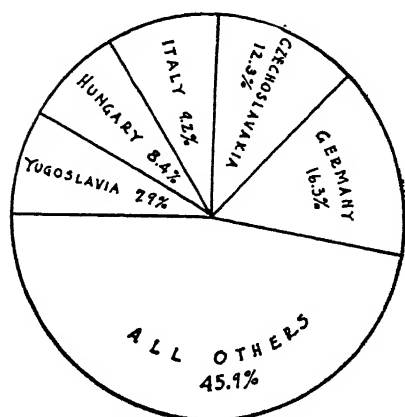
### FOREIGN TRADE

The economic plight of Austria is well illustrated by its foreign trade. Within recent years the value of commodity exports has amounted to only approximately 60 per cent of that of commodity imports. Invisible exports have been insufficient to make up any considerable portion of the balance. Thus during the period 1926-1929 there was an average annual adverse balance of all current items of some \$112,000,000. As a result, the country has had to borrow heavily and go more and more deeply into debt. Unless this situation is remedied within a brief period, the nation will be completely bankrupt. The only permanent remedy would seem to be the reestablishment of freedom of trade in the Danube Basin, such as existed within the Empire.

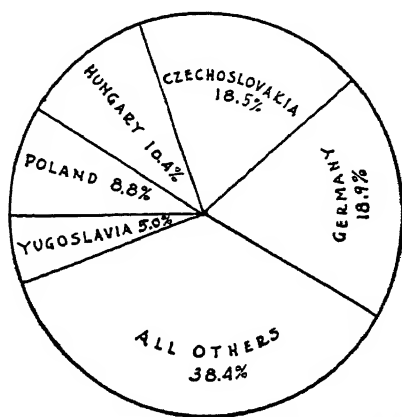
In spite of the fact that Austria is landlocked, its location is favorable for trade. The Danube and a widely ramified system of railroads provide communication with all sections of the continent. The nation is guaranteed freedom of access to the ports of Trieste and Fiume,

but, in spite of this fact, most of its overseas trade moves north and makes use of the port of Hamburg. The location and transportation facilities of Austria not only facilitate its contacts with markets and sources of raw material, but bring the country an important income from transit trade.

The economic position of Austria is well illustrated by the fact that foods make up 31 per cent of all imports, and raw materials comprise 28.5 per cent. On the other hand, 73 per cent of all exports are manufactured goods.



Destinations of Austrian exports; average, 1926-1930. Percentages of total exports. (U. S. Department of Commerce.)



Sources of Austrian imports; average, 1926-1930. Percentages of total imports. (U. S. Department of Commerce.)

The immediate neighbors of Austria are most important in its foreign trade. Austrian manufactured goods are exchanged for the foods and raw materials of the nations to the south and east, while manufactured goods are exchanged for the fuels and industrial products of Germany.

## BIBLIOGRAPHY

- Austrian Federal Press Department of the Federal Chancellery, (ed.), *The Austrian Yearbook, 1931*, Vienna, 1931.
- Hwdeczeck, K., *The Economic Resources of Austria*, translated by Julia F. Fieberger, Vienna, 1922.
- Michael, L. G., "The Agricultural Situation in Austria," *Report F. S. 28*, U. S. Department of Agriculture, Bureau of Agricultural Economics, Washington, 1923.
- Newth, J. D., *Austria*, A. & C. Black, London, 1931.



Roucek, J. S., "Economic Aspects of the Danubian Plan," *Economic Geography*, 1932, vol. 8, pp. 400-408.

Zweckel, E. M., "Austrian Iron and Steel Industry and Trade," *Trade Information Bulletin No. 265*, U. S. Department of Commerce, Washington, 1924.

## CZECHOSLOVAKIA (ČESKOSLOVENSKO)

EAST and west are joined in Czechoslovakia. The western portion of the country, with its advanced population, high degree of industrialization and scientific agriculture, is typical of northwestern Europe. On the other hand, toward the east the people depend largely upon a rather backward type of agriculture and upon forestry, and both economically and culturally they are typical of eastern Europe. However, the combined nation, with its varied resources in the form of soil, minerals and forests, its numerous industries and its capable inhabitants, is the most stable and the most prosperous of the new states created by the peace treaties.

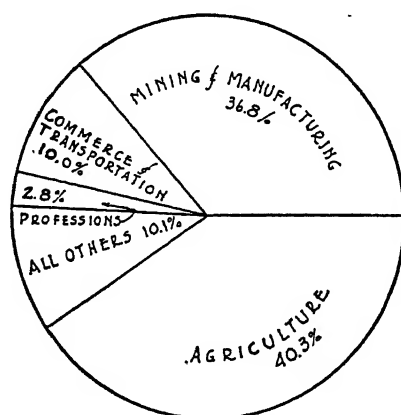
The Czechoslovakian Republic came into existence after the collapse of the Austro-Hungarian Empire. It was formed of territory formerly belonging to Austria, Hungary and Germany. Bohemia, Moravia and a portion of Silesia had been Austrian territory. Slovakia and the autonomous territory of Carpathian Ruthenia were formerly parts of the Kingdom of Hungary. A portion of Silesia was detached from Prussia and incorporated in the new state. In one sense, Czechoslovakia is a recreation of the Kingdom of Bohemia, which lost its independence and was brought under the rule of the Hapsburgs as a result of the Battle of White Mountain in 1620. Slovakia and Ruthenia, however, had formed a part of the Kingdom of Hungary since the tenth century.

## POPULATION

Czechoslovakia consists of a wedge of Slavic peoples penetrating far into central Europe. Racially and linguistically the Czechs and the Slovaks are one people, but culturally and economically there are wide differences. The Czechs, partially due to their protective mountain barriers and abundant resources, have developed the most advanced culture and the highest economic life of any of the Slavic peoples. Their intelligence and industry account in large part for the present position of the state. The Slovaks, in their less protected and less

friendly environment, have developed more slowly than their western relatives, and both their economic and cultural life is typical of that of eastern Europe. The extreme eastern portion of the country is occupied by the Ruthenians, a group differing from the Czechs and Slovaks in both language and culture. They are Russians, both Great Russians and Ukrainians being represented, and culturally and economically they constitute the most backward group in the nation.

**Minorities.**—In addition to these Slavic groups, the country contains large minority elements which constitute nearly one-third of the entire population. The Germans are the largest of these groups. They are most numerous in northern and western Bohemia, northern



Occupations of the gainfully employed population of Czechoslovakia. Percentages of total employed. (U. S. Department of Commerce.)

and southern Moravia, and in Silesia. Approximately 750,000 Hungarians are to be found, chiefly in Slovakia and Ruthenia. Jews are especially numerous in the eastern portion of the country, while in Silesia over 11 per cent of the population are Poles. These minority groups are a source of constant friction and difficulty to the state. The Germans and Hungarians, in particular, form large and aggressive groups whose economic importance is out of all proportion to their numbers. Prior to the World War, they controlled much of the commerce and industry, and owned much of the land within the territories now included in Czechoslovakia. At present they are inclined to be either hostile to or critical of the new regime, and are a source of potential danger to the nation.

**Size and Distribution.**—With a population of 14,700,000 in 1930, the nation had a density of 272 per square mile. This is a total population slightly greater than that of Pennsylvania and New

TABLE 104  
DISTRIBUTION OF POPULATION OF CZECHOSLOVAKIA  
BY NATIONAL ORIGIN<sup>1</sup>

National Origin	Percentage of Total
Czechoslovaks.....	65.5
Germans.....	23.3
Magyars.....	5.5
Ruthenians.....	3.5
Jews.....	1.4
Poles.....	.6
Others.....	.2
Total.....	100.0

Jersey combined, and living in an area approximately equal to that of these two states. The distribution of population is far from uniform, however, and in general it decreases from west to east. Thus Bohemia has 332 persons per square mile, Moravia 309, Slovakia 159, and Ruthenia only 124. The vicinity of Praha and the coal district of Ostrava in Moravia and Silesia have populations of between 800 and 1300 per square mile, making them the most densely settled sections of the country. As in many portions of Europe, recent years have witnessed a movement of people from the country to the towns and cities. Nevertheless, some 52 per cent of the population is still classified as rural.

### SITUATION AND BOUNDARIES

Czechoslovakia lies near the center of Europe and is nearly equidistant from the Baltic, the Adriatic, the North and the Black Seas. While it has no seacoast, three internationalized rivers, the Elbe, the Oder and the Danube, give it access to the sea. Although a portion of its territory drains toward the North Sea, the country is essentially a Middle Danube state. Its past and present political associations have been with this area, as have its economic and cultural connections.

The economic and political results of its central location have been exaggerated by its shape. Although having an area of only 54,206 square miles, it is some 600 miles in length, while its width varies from 50 to 175 miles. Its great length, with its central location, implies a large number of border states and indicates that it is likely to be crossed by numerous trade routes. It is crossed by routes connecting Paris-Beograd (Belgrade)-Istanbul (Constantinople), Berlin-Wien-Budapest,

<sup>1</sup> Gruber, J., *Czechoslovakia*, The Macmillan Company, New York, 1924.

and Wien-Warszawa (Warsaw)-Leningrad, as well as by lines connecting Russia and Poland with the Adriatic. These rail lines, combined with its three important rivers, give it excellent commercial contacts with its neighbors and with all portions of the continent.

Its shape makes the country difficult to defend, a condition which is especially important, as some of its neighbors are former enemies. The western half of the country is almost surrounded by the Germanic peoples of Germany and Austria, a fact which makes it fearful of a possible union of these two states. To the south lies Hungary, a nation which feels itself aggrieved due to the inclusion of a portion of its former territories within the new state. These factors have been largely responsible for the extensive military organization maintained by Czechoslovakia since its formation.

**Boundaries.**—The boundaries of Bohemia are clearly defined by the Böhmer Wald, the Erz Gebirge and the Sudeten Mountains. Between the first two of these ranges occurs a gap followed by an important rail line connecting Praha (Prague) and Leipzig, while between the Erz Gebirge and the Sudeten the Elbe has cut a pass, known as the Saxon Gate, which carries transportation lines connecting Bohemia with Berlin and the North Sea. Slovakia and Ruthenia include the southern slopes of the Carpathians and the northern portion of the Hungarian plain. Thus in these areas natural barriers are lacking toward the south, as the rivers which form a portion of the boundaries tend to unite rather than separate the peoples of their two banks. Separating Bohemia and Slovakia is Moravia, which consists of a depression occupied by the Oder and the Morava (March). These rivers provide north and south gateways to the depression, which has been a connecting link in the most important trade routes between the Baltic and the Adriatic.

### CLIMATE

Czechoslovakia has a modified continental climate influenced locally by relief. In the more densely settled western portion of the country the winters are cold and the summers moderately hot. Thus at Praha the average monthly range of temperature is from 30 degrees Fahrenheit to 67 degrees Fahrenheit. The cold winters interfere with river navigation, ice hindering traffic on the Elbe for nearly three months each year. Rainfall is moderate, varying from less than 20 to more than 30 inches yearly, and some two-thirds of the rain comes during the summer when it is most needed. In a few sections the rainfall is

too light for normal agriculture, but the numerous rivers of the country render irrigation easy and inexpensive. Thus, except in the mountain regions, the climate is favorable to both man and agriculture. Grains and root crops are especially well adapted to this climate, and abound wherever soil and relief are favorable. In the mountains increased elevation results in long, cold winters and greater rainfall. Thus in the Böhmer Wald, which are most exposed to the westerly winds, the rainfall occasionally reaches 70 inches per year. These conditions are favorable for forest growth, but their unfavorable influence on man helps to account for the backwardness of these mountain regions.

## NATURAL REGIONS

### BOHEMIA

Bohemia is the most active and progressive portion of the new Republic. It is an isolated portion of the Armorican Fold worn down to a plateau formation, and almost completely surrounded by forested mountains. The plateau is highest in the south, where it attains an elevation of some 2500 feet. From here it falls away toward the north in a series of terraces, reaching a level of only 370 feet near the Saxon Gate. Thus, unlike the greater part of the country, it drains toward the north, where the Elbe carries its waters to the North Sea. Much of the region is covered with poor soil, but toward the center and the northeast the soil is more fertile. In the lower valleys of the Elbe, the Vltava (Moldau) and the Eger, limestone is covered with a rich alluvium, and here are to be found those fertile stretches which make Bohemia a highly productive agricultural area.

For the most part, the plateau is rolling, with cultivated valleys, pastured slopes and forested hill crests. The well cultivated fields, the numerous little agricultural villages, and the picturesque isolated farmsteads show that the industrious Bohemian peasants have made good use of their land. In the lower and more fertile sections they produce large amounts of wheat, rye, oats and sugar beets, and in some of the valleys special crops such as hops are raised. In the higher portions of the plateau the farmers specialize in rye, oats and potatoes, while the upper slopes are used for permanent pasture. Livestock are to be found on every farm, cattle and swine being especially plentiful. The Bohemian peasants are most progressive, and scientific agriculture, with crop rotation, fertilization and the use of machinery, is the rule.

Bohemia is also the industrial heart of the country. Its wealth of coal, lignite, clay, quartz and agricultural products furnishes the raw materials which the capable Czech and German population have used to fashion a progressive industrial state. Manufacturing has also been aided by the location of Bohemia with respect to the raw materials and markets of other sections of Europe, and by the excellent transportation facilities which enable the Bohemians to take advantage of their favorable location. The coal fields of Plzeň and Kladno are extensively worked, as are those of the Brandau district in the mountains of the northwest. In the northwest, along the German border, lie the great lignite fields which enable Czechoslovakia to rank second



Dairy cattle in the Czech Basin. (Courtesy of the Czechoslovak Consul General, New York.)

among the nations of the world in the production of this fuel. Coal and lignite provide the principal sources of power for the nation's industries, although the textile and timber industries which are located near the bordering mountains make extensive use of water power. On and near the coal fields are the chief centers of the steel and machinery industries. For centuries Jablonec, Plzeň and Praha have been famous for their glass, now made from sand imported from Saxony. The clays of Karlovy Vary (Carlsbad) have given rise to an important porcelain industry. Bohemian hops are of unusually high quality, and have aided in making Plzeň and Budějovice (Budweis) brewing centers of major importance. The sugar refining, flour milling and leather industries are widely scattered in the more productive agricultural sections. The high degree of industrialization in

Bohemia may be seen from the fact that some 41 per cent of the population is supported by mining and manufacturing, while slightly less than 30 per cent receive their support from agriculture.

**Praha.**—Praha, with a population of some 850,000, is the capital and the largest city of Czechoslovakia. Dominated by its castle-crowned hill overlooking the Vltava, it is situated in the midst of a productive agricultural basin. Conveniently located with regard to the coal fields, it is not surprising that it has developed into the nation's leading industrial center. Its industries are highly diversified, but it is especially



Hradcany Castle and the Charles Bridge at Praha. (Courtesy of the Czechoslovak Consul General, New York.)

noted for the manufacture of machinery, foodstuffs and leather. As it is the railway center of the country and a river port of considerable importance, contacts are facilitated with all sections of its own and neighboring countries. Praha is an old city, but its recent expansion has been so rapid that the new overshadows the old, and its office buildings, factories and workers' dwellings give it a most modern appearance.

#### MORAVIA

Moravia resembles Bohemia in being a plateau falling to a lowland basin and bordered by forested mountains. However, it slopes to the



south, and the Morava drains most of it to the Danube, although the Oder drains a small section in the north. In human development also it closely resembles Bohemia, except that agriculture holds a position of greater relative importance than industry, some 41 per cent of its inhabitants being engaged in agriculture while 35 per cent are classified as industrial. The people are active and capable, and both agriculture and industry are carried on in a modern scientific manner.

Industrial activity is aided by the presence of valuable coal deposits at Rossitz and by the proximity of the important Silesian coal fields. Textiles and machinery of various types are the principal manufactured products, but the industrial life is varied. Brno (Brünn) is the leading commercial and industrial center of the province, and has profited by the convergence of valleys at this point and by the proximity of the coal fields.

Moravia has long been an important transit zone. The Oder, cutting its way through the Moravian Gate around the eastern end of the Sudeten, flows northwestward to the Baltic. The Wista (Vistula) also rises near the northern entrance to the Gate and provides a route toward the northeast. Thus two important routes from the north tend to converge on the Moravian Gate, while to the south the Morava leads to the Middle Danube. The divide between these north- and south-flowing rivers is so low that they are connected by canal. Since the days of the old amber route, Moravia has thus been a much used pathway between the Baltic and the Adriatic.

#### SILESIA

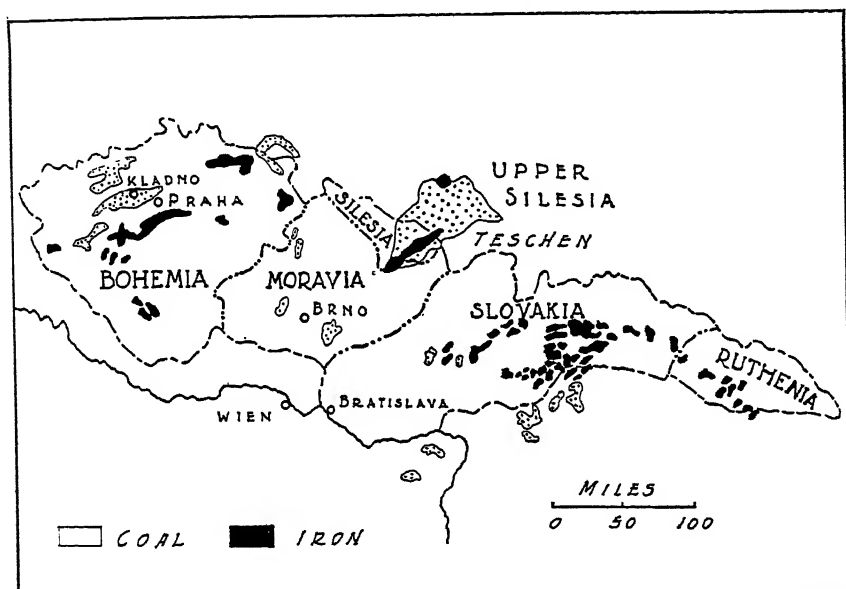
Silesia, which has been joined administratively to Moravia, is especially important because of its rich coal deposits. Here are the famous Ostrava-Karvin fields which constitute the southwestern extension of the Moravian-Silesian-Polish Basin, of which Czechoslovakia owns about 16 per cent. Considerable amounts of this coal are exported, for it is in wide demand due to its excellent coking quality. However, the nearby Upper Silesian coals, which are less well suited for coking, offer effective competition for household or industrial fuel purposes.

The presence of abundant coal and the proximity to important transportation routes have aided in making this the most highly industrialized section of Czechoslovakia. Some 46 per cent of the population are employed in industry, while only 29 per cent are engaged in agriculture. The textile industries are of special importance, and were

originally based on local supplies of wool and flax. The manufacture of iron and steel and metal products has been increasing in importance, but is handicapped by the lack of adequate amounts of iron ore, and by competition from the German and Polish industries.

## SLOVAKIA AND RUTHENIA

Although Bohemia, Moravia and Silesia form the eastern outposts of western European economic and cultural life, the human devel-



The iron and coal resources of Czechoslovakia. (After Whitbeck and Finch, modified.)

opment of Slovakia and Ruthenia is typical of eastern Europe. The population is sparse, and is chiefly engaged in agriculture, forestry and mining. Transportation facilities are less well developed than in the west, and cultural standards are lower. Nevertheless, these provinces contain resources in the form of soil, minerals and forests which, when properly exploited, should materially improve their prosperity.

Both Slovakia and Ruthenia contain a large proportion of rugged land, as they occupy the southern slopes of the Carpathians, the Hungarian Ore Mountains and the northern margin of the Hungarian plain. Agriculture is thus restricted to the valleys and the narrow portion of the plain, although grazing is carried on on the lower slopes. The alluvial soils of the lower sections are rich, and the protection

of the mountains provides a milder climate than in the west. Thus, despite the backward agricultural methods, large crops of corn, wheat, barley, potatoes, tobacco, sugar beets and fruits are raised. The break-up of the large estates and the division of the land into small peasant holdings temporarily disrupted agriculture, but the final result should be to increase production materially.

Large forests of beech and oak occupy many of the slopes, although the higher mountains are clothed with pine and fir. The streams flowing down from the mountains provide abundant water power. Only a small portion of this power is developed at present, but in the future it should aid in the growth of industries utilizing wood as a raw material. At present much timber is exported to Hungary and the east, but with the increase of timber-using industries a larger proportion will be used at home and the manufactured products will be exported.

The provinces are less rich in essential minerals than those of the west. Nevertheless, they contain deposits of iron, lignite, gold, silver and other minerals which may serve as the bases for future industrialization. At present, manufacturing is but slightly developed. This is evidenced by the fact that some 65 per cent of the Slovaks and some 80 per cent of the Ruthenians are engaged in agriculture. Prior to the World War, a thriving iron and steel industry had developed about the iron deposits of the Ore Mountains, but since the separation of this area from Hungary the industry has declined. Future industrialization would seem to depend upon the training of the population and the lowering of surrounding tariff barriers.

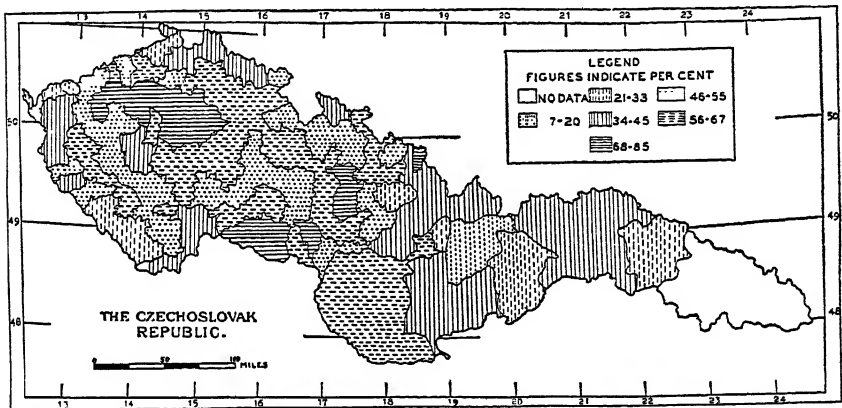
The rivers of Slovakia and Ruthenia largely flow south, and the valleys tend to be isolated by a series of parallel ridges. The provinces thus face toward the south, both physically and economically. Their isolation from the western portion of the country is rendered more complete by the fact that most of the rail lines run in a north and south rather than in an east and west direction. Low passes, such as the Jablunkov and the Dukla, provide easy access to Poland. The economic life of this region is naturally more closely linked to that of Hungary and even to that of Poland than to that of Bohemia and Moravia.

**Bratislava.**—Bratislava (Pressburg) is the principal city of Slovakia, and the only large city in the eastern portion of the country. It is the chief Danube port of Czechoslovakia, and, despite physical handicaps in the form of variations in water level, it is growing in importance. Its position as the gateway to the mining and industrial

district of the Waag Valley has made it an important commercial center. The proposed canal connecting the Elbe and the Danube is to have its southern terminus at Bratislava, and its completion should add materially to the commerce of this port.

### AGRICULTURE

The importance of agriculture in Czechoslovakia is illustrated not only by the fact that this activity engages the attention of a larger proportion of the working population than any other, but also by the fact that some 45 per cent of all the land is under cultivation, while



Arable land in Czechoslovakia. (By B. C. Engle, from *Economic Geography*, vol. 2, p. 220.)

another 18 per cent is in permanent meadow and pasture. Agriculture and industry are well balanced, the nation being nearly self-sufficient in food-stuffs. This excellent adjustment has added materially to the recent economic stability of the country. However, here, as in many other sections of Europe, increased industrialization has caused a shift of population from the farms to the cities, and it is becoming more and more difficult to meet the food needs of the country from domestic sources.

The modified continental climate and the varied soils make the nation especially well suited for a variety of grain and root crops. Grains occupy 60 per cent of the arable land, while potatoes and sugar beets occupy most of the remainder. The best soils are to be found in the valleys of northern Bohemia and Moravia and in southern Slovakia. These are devoted largely to the raising of wheat, barley, sugar beets and hops. On the other hand, the poor or moderately fer-

tile soils of the other sections of the country support crops of oats, rye and potatoes. Corn is raised in some quantities, but is restricted to the sections of the Hungarian plain in southern Slovakia. Animals are abundant, cattle being especially plentiful in Bohemia and Moravia, while sheep and goats are raised in large numbers in the more rugged portions of Slovakia and Ruthenia.

TABLE 105  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN CZECHOSLOVAKIA  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as indicated)	
	1919	Average 1927-1930	1919	Average 1927-1930
Rye.....	1,811	2,489	32,734	65,447
Oats.....	1,368	2,136	46,099	97,543
Wheat.....	833	1,908	15,369	49,806
Barley.....	891	1,812	21,569	61,396
Corn.....	32	352	448	9,443
Potatoes.....	885	1,774	84,091	338,551
Sugar beets.....	433	629	3,636 <sup>a</sup>	6,685 <sup>a</sup>
Alfalfa and clover.....	1,646	2,018	1,951 <sup>a</sup>	3,387 <sup>a</sup>
Hops.....	21	40	9,594 <sup>b</sup>	21,468 <sup>b</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> Unit, pound.

At present the country supplies its needs for all agricultural products except wheat, rye, meats and fats. It is one of the leading exporters of sugar, almost 70 per cent of the total production normally being exported. Nearly 50 per cent of the barley raised is also exported, and large amounts of oats, potatoes, fruits, malt and beer are sent to foreign markets.

In the western portions of the country the agriculture is of an advanced and scientific type. Agricultural machinery is extensively used, the crops are systematically rotated and scientifically fertilized, co-operative societies are well developed, and agricultural education is advanced. As a result, the yield per acre is large and the fertility of the land is maintained at a high level. In the east the methods are more backward, and the pastoral activities receive more emphasis. Thus, production in this area is low, and there is a corresponding possibility for improvement in the future.

**Land Reform.**—Prior to the World War, the major part of the land of the country was in large estates owned by the nobility and the church. Most of the peasants were landless, and the percentage of tenancy was high. Soon after its organization, the new Republic began to deal effectively with this problem. The large estates were expropriated and the land was distributed among the peasants, who were to compensate the former owners for it. The result has been that today 80 per cent of the agricultural land is in holdings of less than 250 acres. Tenancy has materially declined, nearly all the small holdings being farmed by their owners. This reform has operated to the permanent advantage of agriculture and to the greater stability of the state.

### NATURAL RESOURCES

**Forests.**—Approximately one-third of Czechoslovakia is forested, and the abundance of timber adds appreciably to the national prosperity. The eastern portion of the Republic is the most richly afforested, Ruthenia having 50 per cent of its area forest covered, Slovakia 34 per cent, and Silesia 35 per cent. In these provinces conifers make up one-third of the forests, and hard woods, chiefly oak and beech, two-thirds. As transportation facilities are less well developed and markets less available, these forests have not been exploited to the same extent as those of the west. Sawmills, pulp mills and other industries using timber are not as numerous as in Bohemia and Moravia; consequently the east furnishes most of the timber exports. Most of this timber goes to Hungary or, by way of the Danube, to the countries to the east. In Bohemia 30 per cent of the land is forested, and in Moravia 29 per cent. These forests consist mostly of conifers, and the greater part of the timber cut is used for firewood or by local industries.

**Water Power.**—A recent estimate by the Ministry of Public Works places the potential water power of Czechoslovakia at 1,622,000 horsepower. Little effort was made until recently to develop this power, due to the abundance of coal and other power resources, and as a consequence slightly less than 10 per cent of the potential power has been developed. However, a program of increased exploitation is being undertaken to provide electricity for domestic uses, for industries, and for the electrification of the railways. The greatest amount of potential power is to be found in the east, but it has been but slightly developed in this section. The western portion of the country contains

77 per cent of the 13,000 establishments which use water power, thus providing another evidence of the greater degree of industrialization in this region.

**Coal and Lignite.**—The abundant reserves of coal and lignite have aided materially in the economic development of Czechoslovakia. They have not only provided fuel for numerous industries, but have furnished an exportable commodity which is in considerable demand in neighboring countries. Normally, more bituminous coal is imported than is exported. These imports come from Germany and Poland to the industrial centers bordering those countries. As under the Empire, Czechoslovakia supplies Austria and Hungary with much of their coal, and some is also sent into Germany and Poland. The large exports of lignite, going chiefly to Germany and Austria, more than balance the import surplus of bituminous.

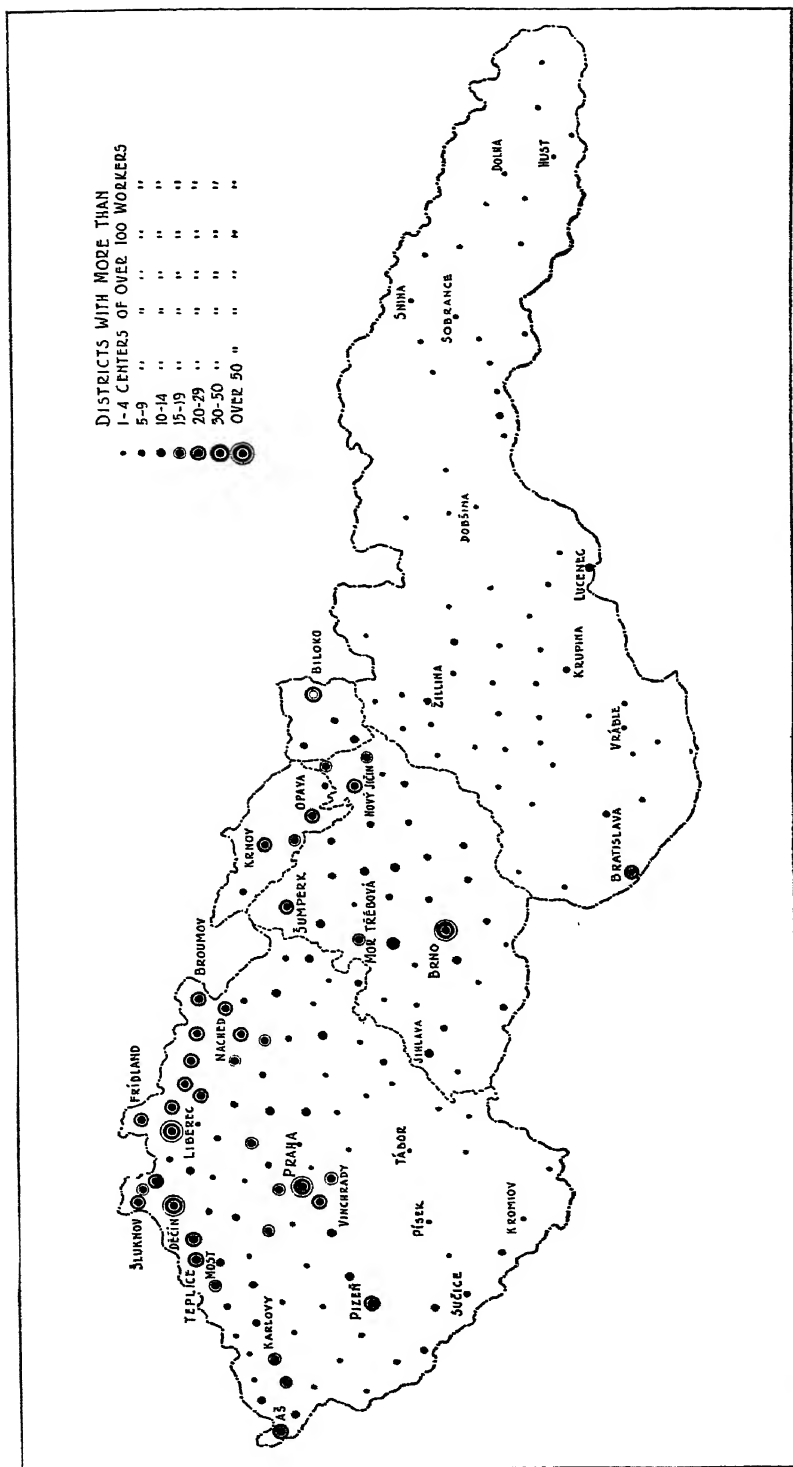
The Ostrava-Karvin field in Silesia normally furnishes 65 per cent of the total coal produced, and provides nearly all of the exports. As has been said, this coal is of excellent coking quality and is in wide demand. Both Bohemia and Moravia have producing fields of considerable importance. The principal deposits of lignite are on the slopes of the Erz Gebirge, although small deposits occur in Slovakia. The western portion of the country is thus well supplied with fuel resources, which are conveniently located with respect to the more important industrial centers.

**Other Minerals.**—Limited quantities of iron ore are to be found in the Kladno district of Bohemia and in the Ore Mountains of Slovakia. Due to its limited amount and low grade, this ore is sufficient to supply only about 50 per cent of the domestic demands, and the remainder is imported from Austria and Sweden.

Copper, lead, silver, gold, radium, antimony, magnesite, graphite, salt, china clay, and numerous other valuable minerals are produced in varying amounts. Each has aided the growth of certain industries, but none of these are produced in amounts sufficient to place the country in an outstanding position with respect to other powers.

## MANUFACTURING

The capable Czechs have been quick to utilize such advantages as abundant power resources, numerous raw materials and a central location in the building up of an important manufacturing industry. This process was aided by its proximity to industrialized Germany and the most active section of Austria, and by the large number of



The distribution of industrial establishments in Czechoslovakia. (After E. Pfobl.)



German immigrants to be found throughout the country. The new Republic received an excellent start as an industrial state by inheriting 80 per cent of the industrial equipment of the Empire. It has added to and modernized this in many lines, until it has become a modern industrial state, deriving 40 per cent of its national income from manufacturing, while but 34 per cent comes from agriculture. Another evidence of its high degree of industrialization is the fact that 74 per cent of all exports are manufactured goods.

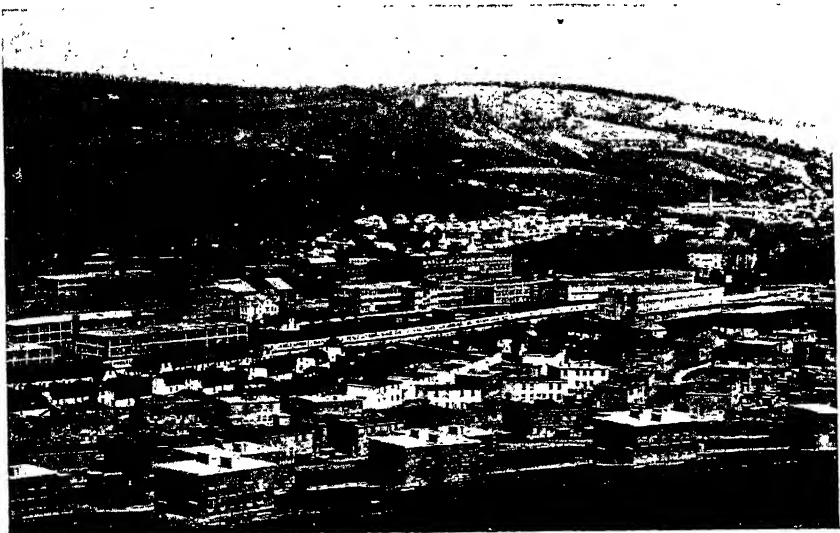
The break-up of the Empire resulted in cutting off many of the industries of the new state from their former markets and sources of raw material. However, such industries as sugar refining, brewing, pottery and the preparation of timber products derive practically all of their raw materials from domestic sources. Others, such as leather, shoes, chemicals, iron and steel, and machinery, must depend partially upon outside sources. The textile industry, which is one of the most important in the country, depends almost entirely upon imported raw materials, but has the advantages of abundant coal and water power, cheap labor, and proximity to markets. Some industries such as glass and beer have a world-wide reputation for quality. In fact, the distance from the seacoast and the necessity of importing a portion of their raw materials have caused an increasing number of industries to specialize on quality products.

TABLE 106  
INDUSTRIAL PRODUCTION IN CZECHOSLOVAKIA  
(U. S. Department of Commerce)

Industry	1913 (present area)	Average 1926-1930	1931
Coal, 1000 metric tons. ....	14,087	15,015	13,241
Lignite, 1000 metric tons. ....	23,137	20,079	17,961
Iron ore, 1000 metric tons. ....	2,177	1,653	1,235
Pig iron, 1000 metric tons. ....	1,228	1,399	1,164
Steel, 1000 metric tons. ....	1,019	1,823	1,529
Manganese ore, metric tons. ....	13,600	96,947	83,883
Salt, metric tons. ....	55,300	146,891	201,104
Beer, 1000 gallons. ....	.....	281,596	271,382
Artificial silk, 1000 pounds. ....	.....	3,593	3,600
Cotton consumption, 1000 pounds. ....	.....	256,924	182,962

The more advanced population, the greater abundance of coal and industrial raw materials, proximity to other industrial areas, better transportation facilities, and closer proximity to markets have caused

industry to concentrate largely in the western portion of the country. The iron and steel industry tends to locate around the coal fields or iron mines of central and northern Bohemia, Silesia and central Slovakia, with a few minor centers in Moravia. Kladno, Horovice, Plzeň and Chomútov in Bohemia; Fryštát, Moravská, Ostrava and Frýdek in Silesia; and Brezno in Slovakia are leaders in pig iron production. Steel is produced in most of these centers and is also important around Praha, Most, Budějovice, Brno and Bratislava. The location of the machinery industry has been largely determined by local markets, and such cities as Praha, Brno, Plzeň, Budějovice and Bratislava are of special importance.



The Baťa shoe factory at Zlin. (Courtesy of the Czechoslovak Consul General, New York.)

Northern Bohemia is quite important in the manufacture of cotton and woolen textiles, with Siberac, Aš, Fridland and Varnsdorf holding leading positions. Northern Moravia and Silesia lead in the manufacture of silk, and produce considerable amounts of linen, woolen and cotton textiles. The manufacture of foodstuffs is closely related to the centers of agriculture production, and is important in Praha, Kolin, Olomouc, Brno and Bratislava. Plzeň, Smichov, Budějovice and Brno have long been noted as among the leading brewing and malting centers of Europe.

In general, industrial activity is greatest in northern and northwestern Bohemia, in the Praha district, and in Silesia. Minor centers

occur around Plzeň and Budějovice in Bohemia, near Brno and Bratislava in Moravia, and in central and southwestern Slovakia.

### FOREIGN TRADE

Although the country is landlocked and bounded in many sections by mountain ranges, its central location and excellent rail and water transportation facilities have aided it in building up a large foreign trade. The peace treaties also assisted by internationalizing the Elbe, the Oder and the Danube, and by providing for special privileges in the use of the ports of Hamburg and Stettin, and reasonable use of the ports of Trieste, Fiume and Danzig. The nation thus has free access to the sea by either water or rail routes. Physical difficulties handicap the use of the three internationalized rivers, but these difficulties can be and are being overcome. Something of the present importance of these waterways is indicated by the fact that 17 per cent of all imports and 13 per cent of all exports move by water.

Germany is the most important nation in the foreign trade of Czechoslovakia, and is followed in this respect by Austria. In general, the greatest trade is with northwestern Europe, although manufactured articles are exchanged for the foods and agricultural raw materials of Hungary and other areas to the southeast. Most of the overseas trade is with the United States, the United Kingdom and Sweden.

TABLE 107  
DIRECTION OF CZECHOSLOVAKIAN FOREIGN TRADE  
(percentage of total)  
(U. S. Department of Commerce)

Country	Destination of Exports Average, 1926-1930	Sources of Imports Average, 1926-1930
Germany.....	20.5	23.5
Austria.....	15.0	7.5
United Kingdom.....	7.6	4.1
Hungary.....	7.0	5.3
Yugoslavia.....	5.9	2.8
United States.....	5.7	5.7
Rumania.....	4.1	3.1
Poland.....	3.6	6.3
France.....	1.6	4.1
All others.....	29.0	37.6
Total.....	100.0	100.0

Thus the North Sea and Baltic ports are better situated to handle this trade than are those of the Black Sea or the Adriatic. Although there has been keen competition between Trieste and Hamburg for the trade of Czechoslovakia, the former port handles only 17 per cent as much as the latter, and even the free port of Bremen handles nearly twice as much Czechoslovakian trade as Trieste.

Being an industrial nation, Czechoslovakia imports chiefly foods, industrial raw materials and semi-manufactured goods, and exports principally manufactured products. In 1930 some 20 per cent of the imports were foods and 46 per cent were raw materials and semi-manufactured goods, while 74 per cent of all exports were manufactured products. Raw cotton, raw wool, machinery, iron and non-ferrous metals are the principal commodities imported; while iron and steel, cotton fabrics, glassware, wool fabrics and refined sugar are the leading exports. Normally there is a favorable balance of trade, the average annual excess of exports over imports being some \$54,000,000 during the five-year period 1926-1930. Foreign trade is very important to many Czechoslovakian industries. For example, between 75 and 80 per cent of the total product of the textile industries is exported, and the glass and numerous other industries export over 60 per cent of the amount produced. Consequently, those dependent upon industry are vitally interested in trade restrictions, and in the economic conditions of those nations which constitute their chief markets. Although politically bound to France, the nation is closely united economically with Germany, and its prosperity must depend in large part upon the conditions existing within the latter country.

#### BIBLIOGRAPHY

- Atlas Géographique et Statistique République Tchèque*, l'Académie Tchèque des Sciences et des Arts, Praha, 1931.
- Bowden, H. H., "Czecho-Slovakia," *Journal of the Manchester Geographical Society*, 1924, vol. 37, pp. 26-50.
- Císar, J., and Pokorný, F., *The Czechoslovak Republic*, T. Fisher Unwin, Ltd., London, 1922.
- Daugherty, W. T., "Chemical Industry in Czechoslovakia," *Trade Information Bulletin No. 708*, U. S. Department of Commerce, Washington, 1930.
- Engle, B. C., "Sugar Products of Czechoslovakia," *Economic Geography*, 1926, vol. 2, pp. 213-229.
- , "Czechoslovakia—Factors of Geographic Unity," *Journal of Geography*, 1925, vol. 24, pp. 1-10.

- Fichelle, A., *La Tchécoslovaquie*, L'Europe moderne, Société Française d'éditions, Paris, 1931.
- Gruber, J. (ed.), *Czechoslovakia; A Survey of Economic and Social Conditions*, The Macmillan Company, New York, 1924.
- Holland, C., *Czechoslovakia; The Land and Its People*, Herbert Jenkins, Ltd., London, 1931.
- Machatschek, F., *Lasdeskunde der Sudeten und West-Karpatenlander*, J. Engelhorn, Stuttgart, 1927.
- Moscheles, J., "Natural Regions of Czechoslovakia," *Geographical Review*, 1924, vol. 14, pp. 561-575.
- Pfohl, E., *Economical Atlas of the Czechoslovakian Republic*, Stiepel Bros., Reichenberg, 1921.
- Prace, M., *Review of Natural Sources of Energy and Their Use in Czechoslovakia* (translation), World Power Conference, Percy Lund Humphries & Co., London, 1924.
- Rankin, K. L., "The Czechoslovak Iron and Steel Industry," *Trade Information Bulletin No. 713*, U. S. Department of Commerce, Washington, 1930.
- Rockwell, A. F., "Czechoslovakia; Its Industries, Resources, Trade and Finance," *Trade Information Bulletin No. 461*, U. S. Department of Commerce, Washington, 1927.
- Seton-Watson, R. W. (ed.), *Slovakia Then and Now*, George Allen & Unwin, Ltd., London, 1931.
- Stanoyvich, M. S., "Czechoslovakia and Its People," *Geographical Review*, 1919, vol. 8, pp. 31-36.

## EASTERN EUROPE

EASTERN EUROPE is the land of the Slav, and of such more recent Asiatic invaders as the Finn, the Magyar, the Bulgar and the Tartar. In addition, it has borne the brunt of invasions by Hun and Vandal, Turk and Avar, and each of these has left an imprint on the blood and culture of the population. Asiatic cultural and racial influences have thus been important, and the effect of these frequent invasions has been to retard progress. Large portions of the eastern peoples have also been isolated from the older and more advanced civilizations of the south and west by the lack of outlets on the more important seas, and by the tremendous distances involved. The eastern European is consequently more backward culturally and economically than his western neighbor, although recently he has been advancing steadily in all phases of human activity.

The east is a land of vast plains, upon which scattered peasants carry on an extensive and frequently backward type of agriculture. Mountains and plateaus occur occasionally, but they form only local interruptions to the plains which stretch from the Carpathians to the Arctic Ocean, and from the Caspian to the Baltic, and which are continued in the plains of Hungary and Rumania. The variations of relief so characteristic of western and southern Europe are lacking, and are replaced by a monotony which leads to a certain uniformity of human development.

The climate also differs from that of the west in that the oceanic influence is less important. Cold winters, hot summers and low or moderate rainfall, coming mostly during the summer season, indicate a true continental type of climate. The growing season is too short for many crops, but the climate is well adapted to most grains and has enabled the east to become the only important food-surplus region of Europe.

The east is less well endowed than the west with such important industrial resources as coal and iron. Water power is also less abundant and less well distributed. However, eastern Europe contains the greatest forests of the continent, and has an abundance of petroleum, manganese, platinum and a few other minerals. These resources are

produced in excess of local demands, and vie with agricultural raw materials for the leading position among the exports of the region.

Agriculture and the exploitation of natural resources are the most important economic activities of the east, while manufacturing is but slightly developed. Large cities are consequently less numerous than in other portions of Europe, and the population is less dense. The relatively sparse population reduces the total trade of the eastern European countries, and the low living standards, combined with the lack of industrial development, have resulted in a low per capita trade. Man is thus less active economically than in the west, although recent years have seen him intensify his activity and increase his efficiency. If this trend continues, commerce and industry should increase in importance and agricultural production should mount steadily. Such a change would bring the two portions of the continent closer together with respect to economic activity; but the east is likely to continue to devote most of its attention to agriculture and the exploitation of natural resources, while the west will remain primarily interested in manufacturing and commerce.

## POLAND (POLSKA)

POLAND is a transition area. To the south it includes a portion of the new folded Carpathians and the plateau which borders them—physical features typical of central and western Europe. However, most of its area lies in the featureless European plain so typical of the eastern portion of the continent. The very name of the country itself, Poland—in Polish, Polska—means the country of the plain. It also contains rivers that empty into both the Baltic and the Black Seas. This transitional character is increased by the absence of natural boundaries and by the climate, which is between that of Germany and that of Russia. Physically and from the point of view of civilization, Poland is, then, a transition area, with all the advantages and disadvantages which such a location involves.

In spite of the varied influences represented, Polish life is distinctly eastern European in character. Economically this is manifested in the predominance of agriculture, the relative unimportance of manufacturing, and the low per capita foreign trade. Culturally it is evidenced by the relatively high degree of illiteracy and the backward standards of many of the peasants. The large proportion of plain as compared to highland also makes the nation typical of the east from a physical point of view.

## HISTORICAL BACKGROUND

Since the rule of its first king, Boleslaw I, the fortunes of Poland have been varied. At times it has expanded until it became one of the major powers of Europe, and again it has declined and at times disappeared, due to internal dissension and pressure from the outside. Between 1772 and 1795 the nation was divided among Russia, Prussia and Austria, and for some 125 years the Poles lived under alien rule. In spite of strenuous efforts on the part of Russia and Prussia to crush Polish patriotism and culture, the people of the divided state displayed a remarkable tenacity in preserving their speech, literature and traditions, and in keeping alive faith in the future recreation of



their state. Consequently, following the defeat of the Central Powers and the Russian Revolution, Poland was again united and set up as an independent republic.

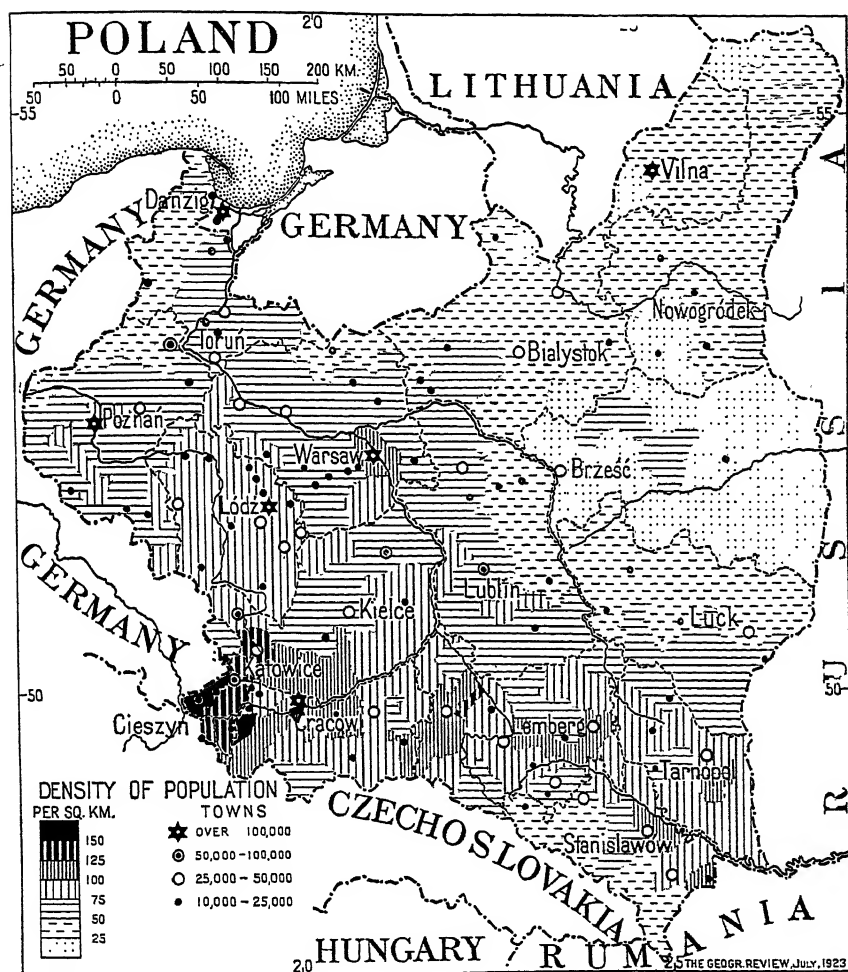
The new state faced many and serious difficulties. Economically, and to a certain extent culturally, the Polish people reflected the conditions existing within the nations under whose rule they had lived for the past century. Poznań (Posen), Śląsk (Silesia) and Pomerania have enjoyed the advantages of German economic development and education, and they form the most advanced portions of the new state. Russian or Congress Poland is the most backward portion of the nation, both economically and culturally, and Galicja (Galicia) occupies an intermediate position in both respects. Following the organization of the new state, internal difficulties reappeared, and it has been necessary to establish a virtual dictatorship in order to insure unity. Disputes with neighboring states also added to the difficulties of the new nation.

### POPULATION

As might be expected in a nation long under alien rule and without natural boundaries, the population of Poland is quite mixed and contains numerous minority groups. According to Polish statistics, in 1921 Poles formed 69 per cent of the population, Ruthenians 15 per cent, Jews 8 per cent, White Russians 4 per cent, Germans 3 per cent, and other nationalities 1 per cent. The Poles are the predominant group in the central and northern portions of the country, especially between Przemysł and Danzig, and between Grodno and the German border. The Germans are located principally in the west, in Śląsk, Poznań and the Polish Corridor. The Ruthenians occupy the south and southeast. In the northeast the White Russians constitute the majority of the peasants, while the Poles constitute the majority in the urban centers. Jews are to be found in large numbers in all the towns and cities of the country.

The Poles are Slavs, more highly developed culturally and economically than their relatives to the east and north, but less advanced than the Slavic Czechs or the Germans. In the past they have suffered from the absence of a middle class. The population consisted of an upper class of landed gentry who were cultured and frequently wealthy, and who controlled the affairs of the Polish state, and a large mass of peasants, mostly landless, very conservative and backward. Recent years have brought about two notable changes among the Poles. The first has been the gradual rise of a middle class in the towns and cities, and

the second has been an improvement in the economic and cultural status of the peasants. This has been partially the result of the breaking up of the larger estates, and partially the effect of an increase in educational opportunities among this group.



The distribution of population in Poland according to the census of 1921. (From "The Population of Poland According to the Census of 1921," by Eugene Romer; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

The Jews were originally encouraged to settle in Poland to serve as traders and occupy the position of middlemen, due to the absence of a Polish middle class who might have performed these functions. They quickly assumed control of a large part of Polish finance, com-

merce and industry, and have retained that control down to the present. Recently there has been considerable friction between the Poles and the Jews. This is due partly to the rise of a Polish middle class who are seeking to compete with the Jews economically, and partly to the contention that most of the Jews are out of sympathy with the new state.

The Ruthenians and the White Russians form the peasant population of the south and east. They are more backward than the Poles, and are conservative and phlegmatic like most of the Slavic peoples. In the southeast a considerable amount of friction has arisen between the Poles and the Ruthenians, the customary conflict of interests between the peasant and the town dweller being accentuated by differences in religion, language and culture.

The Germans of the north and west are in many ways the most active and progressive group within the new state. They were largely responsible for the development of Polish industry, and formed the major element of the population in such industrial centers as Poznań, Toruń, Łódź and the cities of Śląsk. They also owned large amounts of land, and formed one of the most progressive elements of the agricultural population. Today efforts are being made to absorb them, or to so discourage them that they will return to Germany and be replaced by Polish settlers. Thus the old racial and national conflict goes on, and keeps alive a spirit of fear and hatred between these two peoples.

**Numbers and Distribution.**—Poland contains a population which was estimated at 31,104,000 on January 1, 1931, or approximately the same as that of the New England States, New York and Pennsylvania, combined. This places it sixth among the European states, and, as its population is increasing more rapidly than that of any state except

TABLE 108  
OCCUPATION OF THE GAINFULLY EMPLOYED POPULATION  
OF POLAND  
(U. S. Department of Commerce)

Occupations	Percentage of Gainfully Employed
Agriculture and forestry.....	75.9
Manufacturing.....	8.7
Mining.....	.7
Commerce and transportation.....	5.6
Professions.....	1.6
All others.....	7.5
Total.....	100.0

Russia, it may occupy an even higher place in the future. The nation has an area of 149,140 square miles, which is slightly greater than that of the State of Montana. The population density of 207 per square mile is unusually great for an agricultural nation, and accounts in part for the low living standards and the large number of emigrants who have left Poland in recent years. The agricultural character of the country is shown by the fact that only 24 per cent of the population is classed as urban.

### SITUATION

Poland is situated in the midst of the European plain, and separates Russia from Czechoslovakia and Germany. Such a location is most favorable for trade. The great east and west routes following the plain from western Europe to Russia and Asia must of necessity cross the country. Likewise, the valleys of the Wista (Vistula) and the Dnepr (Dnieper) provide the easiest route from the Baltic to the Black Sea. The watershed between these two valleys is occupied by the Pinsk Marshes, and is so low that their two chief tributaries, the Bug and the Prypet, are connected by the Royal Canal, thus providing water communication between the two seas. However, these waterways are so shallow that they are almost unused at present. As has already been noted, this is one of the routes followed by the old amber trade, and today it is followed by a rail line connecting Warszawa, with Kiev and other sections of the Ukraine. Poland is thus the gateway through which flows the trade between Russia and the other portions of the continent.

The lack of natural boundaries has facilitated the commercial contacts of Poland with its neighbors. Only the Carpathians on the south and the Pinsk Marshes on the east offer any physical barriers to transportation. However, this lack of natural boundaries has been a political disadvantage. It has left the nation open to invasion by its most powerful neighbors, and has made the drawing of political boundaries difficult. This was well illustrated after the World War, when the establishment of the new frontiers led to serious disputes with Germany, Russia and Lithuania. As physical barriers were lacking and ethnic boundaries were impossible to determine accurately, the boundary lines at present, as in the past, are the result of military and political forces. As these forces have changed in the past, the boundaries have been shifted, and it is not at all impossible that they may shift again in the future.

## CLIMATE

The climate of Poland is transitional between that of western Europe and Russia. On the whole, it is of a modified continental type, with the marine influences most noticeable in the west and the continental influences predominating in the east. In the extreme west the mean mid-winter temperature is 29 degrees Fahrenheit, and the mid-summer mean is 66 degrees Fahrenheit. In the extreme east, on the other hand, the means are 24 and 67 degrees Fahrenheit, respectively. The rainfall varies from 20 to 24 inches, with some two-thirds coming during the summer. It is heaviest in the northwest where it leads to a dense forest growth, and is least in the southeast where it results in a steppe type of vegetation. However, the climate is everywhere favorable to the growth of hardy temperate crops, and, as droughts are rare, crop yields tend to be quite uniform. Due to the cold winters, ice hinders inland water transportation for some two or three months each year.

## GEOGRAPHICAL DIVISIONS

Low featureless plains stretching on all sides to the horizon, interlaced with numerous rivers meandering through marshy lowlands to the sea—such are the dominant features of the Polish landscape. However, all is not uniformity. To the south rise the crests of the folded Carpathians, bounded on the north by a low plateau of old hard rocks. In the center are the true plains, low and monotonous, and drained by the Wista, the Dnepr and their tributaries. These in turn are blocked on the north by the Baltic Heights set in the midst of lakes and marshes. The great Scandinavian ice sheet has played a most important part in the local relief and in the soils of Poland. It extended as far south as the Carpathians, and its work is evidenced by the innumerable lakes, the changed courses of the rivers, and the morainic deposits which characterize the country.

## THE SOUTHERN HIGHLANDS

The Carpathians extend from the Moravian Gate to the Rumanian plain. To the west they rise in the Tatra to an elevation of some 8000 feet, thus extending above the timber line to heights of bare rock and eternal snow. However, to the east in the East Beskides they are

lower and almost entirely forested. Lumbering is an important activity, and numerous flocks of sheep pasture on the lower slopes. Frequent passes reduce the influence of these mountains as a human barrier, but they play an important part in the life of Poland by keeping out the moist winds from the southwest.

Bordering the Carpathians a low plateau slopes gradually toward the north. In most places it is so low and level that it appears to be a plain. Into it the rivers have cut narrow, steep-sided valleys, but the surface is level except where the glaciers have left morainic deposits in the form of hills. From the point of view of human geography, it is the most important portion of the country, for it contains the principal mining and industrial areas and some of the most fertile land.

**Galicja (Galicia).**—The northern slopes of the Carpathians and the eastern portion of the plateau are known as Galicja, and were ruled by Austria prior to the World War. Here agricultural prosperity varies with the soil, but, especially to the east of the Wista, fertile deposits of loess give rise to a rich farming community. In this area the population is dense and the landscape is a succession of fields and orchards. Wheat, barley, potatoes and sugar beets are the leading crops, and even tobacco is raised in the rich soils near Lwów (Lemberg).

The southeastern portion of this plateau is a steppe region. Today numerous villages cluster along the rivers which have cut deep ravines. The surface of the plateau displays no sign of habitation, but appears as one great grain field which stretches on all sides to the horizon. The major portion of the peasant population is Ruthenian; the Poles are the large landowners and occupy the cities. In the past this area was exposed to constant raids by the nomads of the steppes, and was crossed by the great Tartar track which ran from the Crimea to Lwów.

In addition to its agricultural importance, Galicja contains important mineral wealth in the form of salt, petroleum and zinc. The zinc deposits are located around Kraków (Cracow) near the western border of the province, and furnished 40 per cent of the total Austrian output prior to the World War. The petroleum deposits are in the south, on the northern slopes of the Carpathians. Salt mines are located near Kraków and in the southeast. They were formerly of sufficient importance to produce 41 per cent of the salt of the Austro-Hungarian Empire.

Besides being of economic importance, Galicja has also been of great cultural and political importance to Poland. The section lying to the west of the Wista, and frequently known as Lesser Poland, was the most important part of the former Kingdom of Poland. It con-

tains Kraków, the old capital, and the past and present cultural center of the country. Here also are the great religious shrine, Czestochowa, and the Holy Cross Hills famed in Polish folklore and history, and the whole plateau is dotted with the castles of old Polish noble families.

*Kraków.*—Kraków itself is located at the head of navigation on the Wista. Upon this site routes converge from the Black Sea by way of the Dnestr (Dniester) Valley, from the Hungarian plain around the Tatra, and from the Adriatic by way of the Moravian Gate. The nearby zinc and salt deposits add to the industrial importance of the city. It is also the shrine of Polish culture and patriotism, containing as it does its ancient university and the burial place of the Polish kings.

*Lwów.*—Lwów is a Polish island in the midst of a Ruthenian sea. It also stands at the convergence of trade routes connecting it with the Black Sea, the Rumanian plain, Budapest, Kraków and Warszawa. Its large Jewish population has done much to enhance its commercial importance. The industries of the city are based on nearby agricultural raw materials and the oil fields to the south.

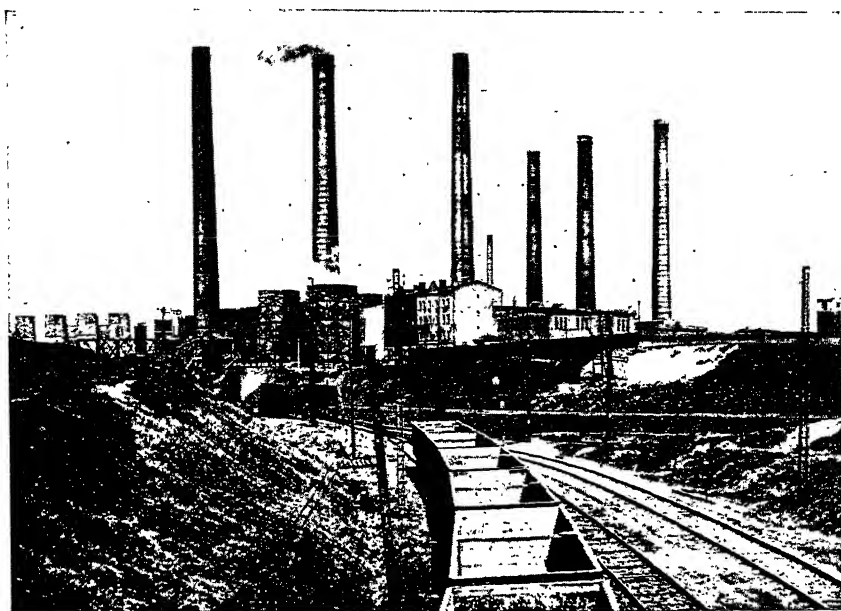
*Śląsk (Silesia).*—Śląsk occupies the western end of the southern plateau and a portion of the upper basin of the Oder. Important resources in the form of coal, zinc, lead and iron, combined with German organizing ability and financial assistance, have made this the most highly industrialized section of Poland. The Śląsk-Moravia-Kraków coal field is one of the largest and most important in Europe. Prior to the World War, it was controlled by Germany, Austria-Hungary and Russia. Following the war it was divided between Poland, Czechoslovakia and Germany, the three countries receiving 72 per cent, 17.5 per cent and 10.5 per cent of its area, respectively. Polish Śląsk thus received by far the largest part of this important coal field, and Śląsk now produces some 78 per cent of all the coal mined in Poland. This coal can be cheaply mined, it is of good quality and in wide demand. There is sufficient produced not only to supply domestic demand, but to create a considerable surplus for export.

Poland also received some 70 per cent of the lead and zinc, and practically all the iron ore of the Upper Silesian district. The first two of these are mined in sufficient quantities to yield an exportable surplus, but the latter is insufficient to supply domestic needs.

Utilizing these resources, the Germans had built up an important metallurgical industry in Upper Silesia prior to the World War. The new boundaries gave most of these industrial plants to Poland. The new nation had, therefore, the advantage of receiving important

mineral deposits and also a large and well-established manufacturing industry based on the use of these minerals.

This industrial development has given Polish Śląsk a dense population, 50 per cent of which is engaged in industry. Unfortunately, however, the population is mixed Polish and German, so that the determination of the new boundary was difficult, and a large German minority remains in Poland. The boundary as it was finally drawn divides a region which forms a single economic unit. This has resulted in injury to mining and industry on both sides of the border.



Mines and factories dominate much of the landscape of Upper Silesia. (Courtesy of the Gdynia America Line, Inc.)

**Poznań.**—Poznań lies to the north of Śląsk, and occupies the middle basin of the Warthe. It consists of a low morainic plateau surmounted by occasional disconnected lines of glacial hills. The influence of the ice sheet is also evidenced by numerous lakes and swamps, and by incoherent river systems. The watershed between the Warthe and the Wista is low and marshy, and is crossed by a canal connecting the two rivers. As in most glacial areas, the soils are varied, sands predominating in some sections and clays in others.

This is the most productive farming section of Poland, not so much because of physical advantage as because of the scientific agricultural methods introduced by the Germans. Large crops of wheat and



sugar beets are grown on the clay soils, while the sandy soils are chiefly devoted to the production of rye and potatoes. The hills are forested, and the swamps form open prairies used in places for grazing. Nearly 60 per cent of the land is cultivated, and approximately the same proportion of the population is rural.

Almost half of the land is held in large estates and farmed extensively. The great barns and homes of the land-owners are surrounded by the houses of the tenants who farm the fields on shares. The holders of medium-sized and small plots of land live in attractive villages of whitewashed brick or clay houses. The green fields, the white houses of the towns surrounded by their green hedges, and the tree-lined roads, present a most attractive rural landscape.

The industrial activity of the region consists largely in the preparation of local agricultural raw material. Posnań and its industrial rival, Bydgoszcz (Bromberg), contain numerous sugar refineries, distilleries, breweries and flour mills.

#### THE CENTRAL BASIN OF THE WISTA

A great plain occupies the middle basin of the Wista, and separates the northern and southern plateaus. This region formed the major portion of Russian Poland prior to the World War and is, as a whole, the most backward section of the country. North of Warszawa the land is low and undulating. Across it the rivers meander in shallow valleys. When blocked by ice in the spring or when raised by heavy rains in the Carpathians, these rivers are subject to terrific floods. The fact that until recent geological times the plain was occupied by great glacial lakes accounts for the complicated river system and the large areas of fertile lacustrine soils.

This central section is almost entirely devoted to agriculture, except in its northern and eastern margins where the open fields give way to great stretches of forest and wide swamps. Here again the better soils are devoted to wheat and sugar beets, while the poorer soils are used to grow rye, oats and potatoes. The peasants and even the large landholders are less advanced than in Poznań. Consequently agriculture is more backward and the yields are lower.

**Warszawa.**—South of Warszawa agriculture is less important, but here is to be found one of the most important industrial districts of the country. Warszawa itself is both the political and the economic capital of Poland. Situated on high ground overlooking the Wista, it not only has the advantage of river transportation to the sea, but is the focus of transportation lines radiating in all directions. It is on the

great east and west route across the European plain, and is a natural gateway to Russia. It is also in close rail contact with all sections of Poland and with Germany. Accordingly it has become the greatest commercial center of the country, as well as the most important point for the distribution of western European goods throughout all of Russia. Nearly every Polish industry is represented in the city, but it is especially noted for its machines and metallurgy, due to its proximity to the minerals of the Petrokov district. The clothing and shoe industries make use of its abundant supply of cheap labor, and its location



Plowing in the fields of Polesia. (Courtesy of the Gdynia America Line, Inc.)

in the midst of a productive agricultural district is reflected in the importance of sugar refining and distilling.

To the southwest of Warszawa, the city of Lodź and the numerous surrounding towns form the chief textile manufacturing center of the country. Part of its importance is due to its location between the wool-producing areas of the southern plateau and the flax-raising districts on the plains north of Warszawa. Its excellent rail connections have also been an advantage, as they have facilitated the importation of raw cotton. However, political factors also played a part in its growth, for the protectionist policy of pre-war Russia worked to its decided advantage.

#### THE POLISH CORRIDOR

The Wista and its tributaries drain the major portion of the new state and form its natural and historical pathway to the sea. Accord-

ingly the framers of the peace treaties provided Poland with a narrow strip of land along the lower Wista and a small section of the Baltic coast. Danzig, the natural port of the Wista Valley, was not given outright to Poland, but became a neutral territory under the League of Nations. Though a free city, it is joined to Poland in a customs union, and Poland controls its foreign affairs. The problem of the city is complicated, and its relation with its natural hinterland is rendered more difficult due to the fact that some 90 per cent of its population is German. Because the Wista, like most Polish rivers, needs dredging



Gdynia, Poland's new port on the Baltic. (Courtesy of the Gdynia America Line, Inc.)

and works of regulation before it will be important as a carrier of commerce, most freight between Poland and Danzig moves by rail.

The Poles desired a port on their own territory, and accordingly, at great expense, they constructed the port of Gdynia to the west of Danzig. Here a new city has been laid out, a port equipped with the most modern facilities. Its phenomenal growth may be seen from the fact that its traffic increased from 9717 tons in 1924 to 3,626,000 in 1930. This port will take more and more commerce away from Danzig, and will add to the economic difficulties of the latter city.

Both the Corridor and the diked lands of the Wista delta are fertile, and the inhabitants of these areas carry on a progressive type of agriculture similar to that of Poznań. However, the problems of this region are political rather than economic. The large German minorities which it contains and the fact that it cuts off and isolates an important section

of the German state have caused it to become a zone of constant friction. It might well be termed the most acute danger zone in Europe.

#### NORTHERN POLAND

Northern Poland consists of a low, lake-dotted plateau surmounted by the Baltic ridges. For the most part, the soil is poor except along such valleys as the Neimen. Agriculture is accordingly of slight importance, and much of the region is forested. Many of the lakes have



Northeastern Poland is a land of lakes, forests and marshes. (Courtesy of the Gdynia America Line, Inc.)

filled up and become swamps, which hinder transportation locally. The rural population is largely made up of White Russians, although the Poles own much of the land and constitute the major portion of the population of most of the cities.

In this region lies another disputed territory, Wilno, the old Lithuanian capital. After the World War the Allies recognized Poland's title to this territory, in spite of the opposition of Lithuania. Since then it has been the cause of continual bitterness between the two states. The city formerly occupied a position of considerable economic importance, due to its command of a portion of the Russian trade, but its importance in this connection has decidedly decreased. and it will be of little economic value to Poland.

## AGRICULTURE

Poland is primarily an agricultural country, some 76 per cent of the population being engaged in this activity and in forestry, as compared with 9.4 per cent in manufacturing and mining. The importance of these activities is also evidenced by the fact that 47 per cent of the land is classified as arable, 16.4 per cent as permanent meadow and pasture, and 21.3 per cent as forest. The proportion of cultivated land is greatest in the central and western portions of the country, and declines toward the north and east.

Glaciation has resulted in wide variations in the fertility of the soil, and this in turn has led to the raising of a variety of crops. The large areas of poor or moderately fertile soil have made rye the principal bread crop. These soils also support a large acreage of oats and potatoes, and these three crops combined occupied some 60 per cent of the arable land in 1930. Wheat, sugar beets, flax and corn occupy the more fertile lands. The raising of livestock is also an important phase of agriculture, cattle, horses and swine being plentiful in the central and western portions of the country while sheep are abundant in the south. Something of the agricultural importance of the country may be seen from the fact that among the European powers it ranks third in the production of cattle, and fifth in the production of barley. Normally

TABLE 109  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN POLAND  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as indicated)	
	Average 1909-1913 <sup>a</sup>	Average 1927-1930	Average 1909-1913 <sup>a</sup>	Average 1927-1930
Rye..... <sup>s</sup>	12,570	13,543	224,840	253,596
Oats.....	6,793	5,583	193,892	192,704
Wheat.....	3,350	3,398	63,675	65,407
Barley.....	3,127	3,019	68,390	72,195
Potatoes.....	5,941	6,412	910,858	1,121,313
Sugar beets.....	431	531	4,183 <sup>b</sup>	4,552 <sup>b</sup>
Flax.....	199	282	90,433 <sup>c</sup>	134,736 <sup>c</sup>

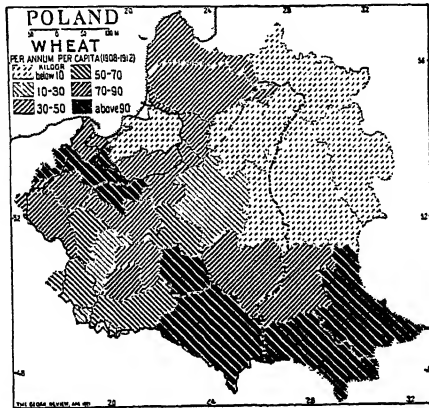
<sup>a</sup> Within present boundaries.

<sup>b</sup> Unit, metric ton.

<sup>c</sup> Unit, pound.

these foods are produced in sufficient amounts to make the country self-sufficient in foodstuffs and to create a small surplus for export. Several of the crops are used for industrial purposes. Large amounts of beet sugar are manufactured, and the nation ranks second among the European states in the export of this product. Many of the potatoes form the raw materials for the distilling industry, and hops and grains are used for brewing.

The human development of the various sections of the country is even more important than physical variations in accounting for the differences in crop yields. As Table 110 shows, the yield is highest in the west, which has had the advantage of German training in scientific



The distribution of wheat in Poland. (From "Agriculture and Land Ownership in Poland," by H. Arctowski; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

agriculture. Eastern Poland, with its backward Russian methods and poorer physical conditions, has the lowest yield. Thus each section reflects the conditions existing within the nation of which it was a part prior to the World War.

**Landownership and Agricultural Methods.**—The type of agriculture carried on locally depends much upon the size of the farm. Until very recently all the land of Poland was held in large estates by the landed gentry. Gradually, however, in the section under Prussian control, a considerable number of small and medium-sized farms came into being, and a class of landed peasant proprietors grew up. This change was much less noticeable in the sections under Russian and Austrian control, and up to the World War most of the land in those areas remained in large holdings. Thus in 1918 some 18,000 landholders owned 40 per cent of all the land in Poland.

TABLE 110  
AVERAGE YIELDS OF REPRESENTATIVE CROPS  
IN VARIOUS SECTIONS OF POLAND<sup>1</sup>  
(yield in quintals per hectare)

Division of Country	Crop			
	Rye	Wheat	Barley	Oats
Poland as a whole.....	11.2	11.7	12.3	11.7
The center.....	11.4	13.0	13.1	12.6
The east.....	8.5	10.3	8.9	8.1
The west.....	14.8	17.8	18.4	17.7
The south.....	10.0	9.5	10.4	10.4

In spite of efforts by the new government to divide the land into small peasant holdings, the accompanying table shows that a considerable amount of the land is still in large farms. This is especially true in the east, where estates of over 25,000 acres are not uncommon. On the other hand, there has been a decided increase in the number of small and medium-sized farms.

TABLE 111  
LANDHOLDINGS IN POLAND<sup>2</sup>

Size of Holding	Percentage of Total Holdings	Percentage of Total Land Included
Small, 1.25 to 6.50 acres.....	35.6	7.5
Small, 6.50 to 25 acres.....	41.7	29.3
Medium, 25 to 250 acres.....	12.1	25.8
Large, 250 to 1250 acres.....	0.3	7.5
Large, above 1250 acres.....	0.1	28.2

The method of farming the large estates varies somewhat in different sections. In many areas the estates are divided up into farms of between 1000 and 1500 acres, and each of these farms is placed under the control of a highly trained manager. Farm machinery and fertilizers are extensively used, and such farms are scientifically cultivated. On each farm are villages of from 50 to 60 houses, the homes of the peasants who perform the actual labor. Each peasant is given

<sup>1</sup> Staniszkis, V., *L'agriculture polonaise*, publié par le *Messenger Polonaise*, Warszawa, 1929, p. 142.

<sup>2</sup> Stecki, J., "La structure agraire de la Pologne," *L'illustration économique et financière*, numéro spécial, *La Pologne*, Paris, Oct. 29, 1928, p. 99.

some 25 acres of land to cultivate, the seeds, fertilizer and machinery being furnished by the owner of the estate. Cultivation is under the direction of the manager, and the peasant works the land on shares. The use of fertilizers, farm machinery and trained managers has resulted in a relatively high yield per acre on the large estates. At present the production per acre is nearly 30 per cent greater than on the smaller holdings.

TABLE 112  
AVERAGE YIELD ON LARGE AND SMALL FARMS IN POZNAŃ<sup>1</sup>  
(yield in quintals per hectare)

Crop	1924-1925		1925-1926		1926-1927	
	Small Farm	Large Farm	Small Farm	Large Farm	Small Farm	Large Farm
Winter wheat.....	10.6	13.3	13.1	16.7	11.8	13.8
Spring wheat.....	8.9	11.7	9.8	12.2	10.0	13.1
Oats.....	11.3	12.7	12.2	14.4	12.2	14.8
Winter rye.....	9.9	11.6	12.7	14.9	11.0	13.2
Spring rye.....	7.9	9.3	9.0	10.7	8.1	10.0
Winter barley.....	14.2	18.4	15.1	21.0	13.8	18.5
Spring barley.....	11.2	14.1	12.7	15.4	12.1	15.1
Potatoes.....	101.0	117.0	117.0	139.0	127.0	146.0
Sugar beets.....	130.0	185.0	151.0	191.0	105.0	170.0

The medium-sized holdings of from 25 to 250 acres are increasing in number. On these farms the land is usually cultivated by the owner and his family. Here, as on all Polish farms, the women work in the fields with the men, the total number of agricultural laborers being almost equally divided between men and women. One difficulty of such holdings is that they are frequently divided into a number of plots of ground which may be situated several miles from one another. The size and shape of these plots may render proper cultivation difficult. The farmers of the medium-sized farms usually live in large agricultural villages which frequently stretch for long distances along the roads.

The small peasant holdings of less than 25 acres comprise 77 per cent of the total number of farms in the country, but occupy only 37 per cent of the land. Here hand labor is universal, the farmer and his family cultivating the land intensively; but the inability to purchase

<sup>1</sup> Lefèvre, M. A., "La Poznanie rurale," *Extrait du Bulletin de la Société Royale de Géographie d'Anvers*, Anvers, 1930, p. 25.



fertilizers and the lack of knowledge of scientific agriculture reduce the yield per acre. In many instances these holdings are so small that they do not suffice to support the farmer and his family, and it is necessary to supplement the income from other sources. Frequently the farmer will work for a portion of the year on some neighboring estate, or, if such labor is available, will seek employment in some nearby industry. Poverty is the rule on such farms, and the high birth rate makes it necessary for a constantly increasing number to seek employment elsewhere. Consequently it is from such farms that most Polish emigration takes place.

The government's program for the breaking up of the large estates will have a twofold effect. From the social point of view, it will encourage the growth of a middle class and will tend toward greater stability and interest in government affairs on the part of the peasants. On the other hand, it will mean the loss of the large landholders who in the past formed the backbone of the Polish state, and who are the most highly cultured group in the nation.

From an economic point of view, such a change may result in reducing the total agricultural production, as the production per acre is greater on the large estates. Although production among the small landholders may be expected to increase with improvements in education and greater economic stability, the size of the peasant holdings will have to be so small as to discourage scientific cultivation. Also, the high birth rate and the system of inheritance in vogue will result in splitting the land up into still smaller units. The only solution to the problem of supporting the present dense and growing population on a moderate standard of living would seem to be the development of local manufacturing or household industries, so that the farmer and his family may supplement their agricultural income by engaging in these other activities.

#### NATURAL RESOURCES

**Forests.**—Originally much of Poland was forested, but most of the land suitable for agriculture has been cleared, and today forests cover only 21 per cent of the total area of the country. The original forest was mostly of hard woods, but the greater part of that which remains is pine. At present the most heavily forested regions are the Carpathian slopes and the sandy areas of the north. Sawmills, pulp and paper mills, and other industries using wood as a raw material are increasing in number, and wood is also extensively used as a household

fuel. The forests of the country not only supply domestic needs, but yield a considerable surplus for export. Between 1926 and 1930 the export of wood and wood manufactures averaged \$54,114,000 yearly, ranking second only to agricultural products among the exports of the nation.

**Coal.**—The actual, probable and possible coal reserves of Poland are estimated at approximately 62,000,000,000 tons, placing it third among the European powers in this respect. Polish Upper Silesia and the Dahrowa district contain all the high-quality coal in the country. Much of the Upper Silesian coal is of good coking quality, and therefore in wide demand. The veins are thick and frequently near the surface, thus rendering mining costs low. Normally 75 per cent of



The distribution of forests in Poland. (From "Agriculture and Land Ownership in Poland," by H. Arcowski; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

Poland's coal production comes from Upper Silesia, 19 per cent from Dahrowa, and 6 per cent from the Kraków district.

Upper Silesian coal is widely exported, most of it moving through the port of Gdynia to the Baltic markets, where it has replaced British coal. Considerable amounts also go to Czechoslovakia, Austria and Hungary. The export of Polish coal is handicapped by the distance of the mines from the seacoast, but low mining costs serve to counteract this disadvantage in large measure. The value of coal exports averaged \$41,851,000 from 1926 to 1930. Poland could easily increase its coal production, but such increase must depend upon an expansion of foreign markets or domestic consumption.

**Other Minerals.**—Poland contains a considerable variety of other minerals, most of which are to be found in the mountains and plateaus

of the south. Iron and limestone are located near the coal of the Upper Silesia district. Unfortunately, the iron is sufficient to supply only about 50 per cent of the domestic needs, and is rapidly being exhausted. In the same area are large deposits of lead and zinc. A considerable surplus of zinc is produced for export, and the country ranks second to Belgium among the European states in zinc smelter production. On the slopes of the Carpathians in southeastern Galicja are petroleum deposits sufficient in size to place Poland third among the European states in oil production. The wells yield considerably less than they did prior to the War, and are likely to continue to decline unless the tapping of deeper sands opens up new reserves. Important deposits of potash have been opened up in Poznań, and near the Carpathians in the southeast. These were not exploited to any extent prior to the World War, but they are now beginning to be used extensively, and their development should be a material aid to Polish agriculture.

TABLE 113  
MINERAL AND INDUSTRIAL PRODUCTION OF POLAND  
(U. S. Department of Commerce)

Industry	1913 (present area)	Average 1926-1930	1931
Coal, 1000 metric tons.....	40,972	39,639	38,268
Petroleum, 1000 barrels.....	7,870	5,289	4,639
Iron ore, metric tons.....	474,000	547,283	284,400
Potash, crude, metric tons.....	2,344	296,327	261,600
Lead, metric tons.....	41,589	34,961	32,400
Zinc, metric tons.....	192,298	155,767	130,800
Pig iron, 1000 metric tons.....	1,055	563	347
Steel, 1000 metric tons.....	1,619	1,217	1,037

## MANUFACTURING

Although Poland is primarily an agricultural country, industries are well developed in the southwest. Manufacturing in this section has been aided by the abundance of fuels and agricultural and mineral raw materials. The southwest also had the advantage of German training and the assistance of German finance and organization. The central part profited from its former protection by Russian tariffs and its relations to the Russian markets. While these factors aided industrial growth, they did not result in a well-balanced industrial system, or one adjusted to the needs of the new state. The equipment for the

manufacture of certain metals and textiles is capable of producing products considerably in excess of the domestic demand. As post-war boundaries and tariffs cut these industries off from their former markets, they have experienced numerous difficulties. However, in many other industries the equipment is insufficient to meet the domestic demand, so that imports are necessary. In fact, the imports of manu-



The location of Polish industries. (After Bowman, modified.)

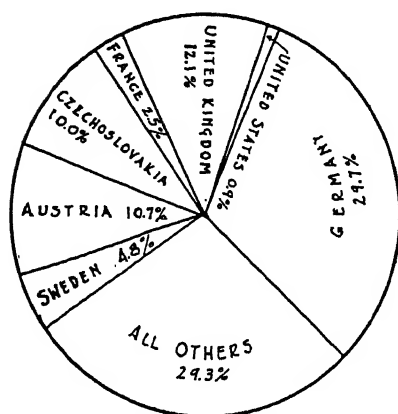
factured goods make up 46 per cent of the total imports, and aid in giving the country an unfavorable balance of trade. While manufacturing will doubtless expand gradually in the future, it will, for an indefinite period, be primarily concerned in supplying domestic demands, and will consequently produce little surplus for export.

### FOREIGN COMMERCE

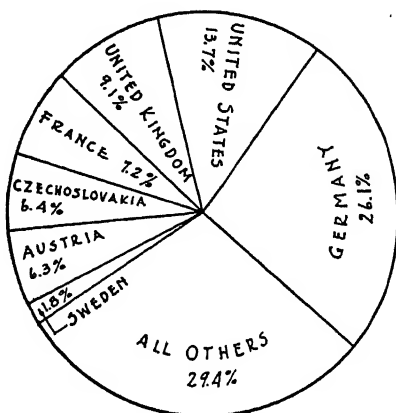
The per capita foreign trade of Poland is very small, Russia, Bulgaria and Rumania being the only European states which rank below

it in this respect. The nation normally has an unfavorable balance of trade, although in 1930 a sharp decline in imports gave it an export surplus for the first time since 1926.

Polish exports consist chiefly of foods and industrial raw materials, with wood, coal, metals, swine and eggs the leading individual items. On the other hand, such manufactured and semi-manufactured goods as chemicals, textiles, machinery and metals make up 87 per cent of all imports. Neighboring and highly industrialized Germany is the lead-



Destinations of Polish exports; average, 1926-1930. Percentages of total exports. (U. S. Department of Commerce.)



Sources of Polish imports; average, 1926-1930. Percentages of total imports. (U. S. Department of Commerce.)

ing nation in the trade of Poland, although considerable trade is carried on with all bordering countries and with the Baltic States.

## BIBLIOGRAPHY

- Allen, R. H., "Potash in Poland," *Trade Information Bulletin* No. 449, U. S. Department of Commerce, Washington, 1927.
- Arctowski, H., "Agriculture and Land Ownership in Poland," *Geographical Review*, 1921, vol. 2, pp. 161-171.
- Bujak, F., *Poland's Economic Development*, George Allen & Unwin, Ltd., London, 1926.
- Chisholm, G. G., "The Free City of Danzig," *The Geographical Journal*, 1920, vol. 55, pp. 305-309.
- Czarnomski, F. B., *The Polish Handbook*, Eyte & Spottiswade, London, 1925.
- Gorecki, R., *La Pologne Nouvelle*, Banque de l'Economie Nationale, Warszawa, 1931.
- Lefèvre, M. A., "La Poznanie rurale," *Extrait du Bulletin de la Société Royale de Géographie d'Anvers*, Anvers, 1930.

- L'illustration économique et financière*, numéro spécial, *La Pologne*, Paris, Oct. 27, 1928.
- Michotte, P. L., *Le Rôle du Carbon dans la Balance Commerciale de la Pologne*, Pierre Dykmans, Imprimeur, Bruxelles, 1930.
- Romer, E., *La Pologne Contemporaine—Atlas Statistique*, Warszawa, 1926.
- Staniszki, V., *L'agriculture polonaise*, publié par le *Messenger Polonaise*, Warszawa, 1929.
- Super, D. E., *The Background of Polish-German Relations in Charts and Figures*, The Ellner Co., New York, 1932.
- Van Cleef, E., "Danzig and Gdynia," *Geographical Review*, 1933, vol. 23, pp. 101-107.

## THE NEW BALTIC STATES AND FINLAND

## THE NEW BALTIC STATES

THE three tiny states of Lithuania (Lietuva), Latvia (Latvija Republika), and Estonia (Eesti Vabariik) were carved out of Baltic Russia following the World War. They were created partially to satisfy aspirations for independence and partially to restrict Russia's contact with the Baltic. Small size and limited resources render doubtful the possibility of their continued independence. Their future might be assured by economic union with one of their larger neighbors or among themselves, but unfortunately racial, linguistic and cultural differences render such unions difficult. Nevertheless, a start in this direction was made in 1927, when Latvia and Estonia joined in a customs union.

Of the three states, Lithuania alone had ever enjoyed former independence. During the fourteenth century it became a powerful nation, with territories extending from the Baltic to the Black Sea. Later it was absorbed by Poland, and remained the property of that state until it came under Russian control toward the end of the eighteenth century. Following the World War, Poland desired to include Lithuania within its boundaries on the historical basis of former ownership, but the spirit of Lithuanian nationalism had been kept alive, and its people demanded and received independence. The seizure of Wilno by the Poles and the fear of Polish absorption have made the Lithuanians bitter enemies of their southeastern neighbors.

Much of the history of Lithuania and all of the history of Latvia and Estonia has been the record of domination by other peoples. Germans, Swedes, Poles and Russians have all held these territories in part or in whole, and have all left their imprint upon the cultural and economic life of these peoples. The Germans in particular have exerted a profound economic influence. Since the days of the Teutonic Knights, the entire eastern coast of the Baltic has contained German minorities which have controlled much of the industry and trade, and owned large amounts of land. They have also constituted the most progressive and capable portion of the population. Today their im-

portance, combined with their lack of sympathy for the new regimes, complicates the problems of the new states.

#### POPULATION

The Letts and Lithuanians belong to the Indo-European racial group and speak an ancient Aryan tongue. The Esths resemble the Finns in being members of the Finno-Ugrian race and they speak an Asiatic tongue. All three peoples are capable and moderately advanced culturally and economically. However, the Esths have developed a more advanced and up-to-date civilization than their southern neighbors. All three countries contain small minority groups of Germans and Russians, and Latvia and Lithuania have small Polish minorities. As has already been indicated, the German minorities have an economic and cultural importance out of all proportion to their numbers.

As agriculture is the principal activity in all three countries, urban centers are relatively unimportant, and the density of population depends upon the manner in which the soil and climate influence crop yield. Riga, with an estimated population of some 378,000, is the largest city, and Tallinn and Kaunas (Kovno) are the only other cities with a population approaching or exceeding 100,000. The density of population decreases from south to north as the natural advantages for agriculture decline. Thus Lithuania has a density of 110 per square mile, while Latvia has only 75, and Estonia 60. The activity of the population also changes from south to north, as is evidenced by the fact that Lithuania has 77 per cent of its working population

TABLE 114  
OCCUPATIONS OF THE POPULATION OF THE NEW BALTIC STATES  
(percentage of the total)  
(U. S. Department of Commerce)

Occupation	Country		
	Lithuania	Latvia	Estonia
Agriculture and forestry.....	77.0	61.0	59.0
Industry.....	6.0	12.6	15.7
Commerce and transportation.....	3.0	6.0	4.2
All others.....	14.0	20.4	21.1
Total.....	100.0	100.0	100.0



engaged in agriculture, while Latvia has 61 per cent, and Estonia 59 per cent. This variation is again accounted for by the more unfavorable agricultural conditions to the north.

#### SITUATION

The new Baltic States are situated along the eastern shore of the Baltic, separating Poland from Finland and cutting Russia off from the sea. Culturally and ethnically they constitute a gradual transition zone between Poland and Finland. Lithuania resembles Poland in culture, contains important elements of Polish population, and, like Poland, is dominantly Roman Catholic. The Esths, on the other hand, are of the same racial stock as the Finns, speak a similar language, resemble them in culture and, like them, are chiefly Protestant. Latvia occupies an intermediate position in nearly all respects. The lack of natural boundaries has been largely responsible for the transitional character of the three states by facilitating ethnic and cultural penetration from all sides.

Latvia and Estonia contain the most important Baltic ports of pre-war Russia. Tallinn (Reval), Riga, Liepāja (Libau) and Klaipėda (Memel) not only have good rail connections with central Russia, but are superior to Leningrad in that they are less obstructed by ice. They form the natural Baltic gateway of Russia, and even today they cause these countries to be transit zones through which passes much Russian trade.

The lack of natural boundaries made the establishment of the frontiers of the three states extremely difficult. The existing boundaries were determined as far as possible on an ethnic basis, but where people have so intermingled as in these areas, the establishment of such lines must of necessity be arbitrary. The only boundary disputes of any consequence concerned the control of the city of Wilno and the Klaipėda district. The Lithuanians greatly desired Wilno because it was their former capital, and because of its economic importance as a distributing point for Russian trade. However, after its seizure by bands of Polish irregulars, it was recognized by the powers as Polish territory. The former German port of Klaipėda is the natural outlet for Lithuania. After the World War it was placed under the control of the League of Nations, but was subsequently transferred to Lithuania, subject to certain restrictions guaranteeing local autonomy and freedom of transit trade. These restrictions have led to friction with both Germany and Poland.

## CLIMATE

The climate is of a modified continental type, with long winters which increase in severity toward the north and east. With the exception of those on the exposed western coast, the harbors are frozen from three to four months each year, and the rivers are obstructed for an even longer period. Ventspils (Windau) and Liepāja are so situated as to be most exposed to the Atlantic winds, and are consequently least handicapped by ice. Rainfall varies from 19 to 25 inches, and falls mostly during August and September. This light rainfall is ample for agricultural needs and for forests, as the soil is of a type which retains the moisture. In general, the climate is of a type which is suitable for hardy grains and forage crops, and it favors the growth of timber.

## RELIEF

The new Baltic States occupy a portion of the European plain, and the relief resembles that of the coastal areas of Germany and Poland. The country is generally flat, although it is occasionally broken by morainic hills which attain a maximum elevation of some 1000 feet in the Baltic Ridges. The whole territory has been intensively glaciated, with the result that lakes, peat bogs, and stretches of barren ground are common. Glacial action has also resulted in a varied soil, much of which is of low fertility. The rivers have cut deeply into the plain, but although they are numerous, ice and frequent sand bars render them largely unsuitable for transporting anything except log rafts. The coast is of a low, sandy, lagoon type which contains few desirable harbors. The two eastern projections of the Baltic in the Gulf of Finland and the Gulf of Riga are also handicapped by the fact that there ice forms a more serious obstruction than on the open Baltic.

## AGRICULTURE

The great majority of the population of the new Baltic States are peasant farmers. Prior to 1920 they were, for the most part, tenants on the large estates held by the German and Russian landowners. After their formation, the new states quickly nationalized the large holdings and divided the land among the peasants.

The severe winters encourage the farmers to concentrate largely on the raising of the hardier grains, potatoes and flax. The severe climate and poor soils cause wheat to be of but slight importance, except in the south. Rye is the principal bread grain raised, and competes with oats for the occupation of the greatest acreage. Barley is also important, and flax is the most important crop raised for export. Potatoes are raised in large amounts for human and animal food and for industrial uses.

TABLE 115  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN LITHUANIA  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as indicated)	
	Average <sup>a</sup> 1909-1913	Average 1927-1930	Average <sup>a</sup> 1909-1913	Average 1927-1930
Rye.....	1,749	1,178	24,283	21,778
Wheat.....	211	426	3,264	8,064
Barley.....	536	491	8,820	9,677
Oats.....	961	799	22,910	23,060
Potatoes.....	403	343	40,864	54,779
Flax.....	143	215	50,706 <sup>b</sup>	72,342 <sup>b</sup>
Hay and clover (sown) ..	.....	926 <sup>c</sup>	.....	1,451 <sup>cd</sup>

<sup>a</sup> Within present boundaries.

<sup>b</sup> Unit, pound.

<sup>c</sup> 1928-1930.

<sup>d</sup> Unit, metric ton.

Several poor crop years, combined with increased competition from cheap Russian grains, have resulted in decreased attention to the raising of grains and other crops. Instead, interest is being manifested in the raising of livestock, especially for dairy purposes. The governments have been taking an active part in this movement through the establishment of agricultural schools, the organization of cooperative societies, and the standardization of products. Today dairy products and meats form the leading agricultural exports of all three countries.

Climate and soil are more favorable for agriculture toward the south. This is reflected in the fact that 47 per cent of Lithuania is classified as arable land, while but 30 per cent of Latvia and 23 per cent of Estonia are in this classification. On the other hand, the cool climate and poor soils of the north, although unfavorable for cultivation, are well suited for natural forage. As a result, permanent meadow

and pasture occupy 40 per cent of Estonia, 26 per cent of Latvia, and but 24 per cent of Lithuania.

In spite of the large proportion of the population engaged in agriculture and the considerable areas of level land, Lithuania alone of the three states approaches self-sufficiency in foodstuffs.



An agricultural village in Lithuania. (Courtesy of the Consulate General of Lithuania, New York.)

#### NATURAL RESOURCES

With the exception of soil, forests constitute the only natural resource of major importance. Although the proportion of forested land varies from 17 per cent in Lithuania to 28 per cent in Latvia, all three countries have ample reserves to meet their own needs and to provide a surplus for export. The forests consist largely of conifers, with spruce and pine predominating. The timber which they furnish serves as the raw material for the leading industries of the area, and in a prepared or raw state competes with agricultural products for the leadership in exports.

Mineral resources, with the exception of peat, sand and clay, are largely lacking in the three states. Estonia is an exception to this rule. Here rich oil shales, which should yield up to 40 per cent crude oil, underlie some 2000 square miles. The exploitation of this resource has only begun, but in the future it is likely to become of con-

siderable importance. This country also has some reserves of phosphorite and Lithuania possesses small deposits of amber.

### INDUSTRY

Prior to the World War, the principal ports of the Baltic States contained industries of considerable importance designed to supply the Russian market. They were stimulated by cheap freight rates on coal, iron ore, and other raw materials which were carried instead of



The edge of the Lithuanian forests. (Courtesy of the Consulate General of Lithuania, New York.)

ballast by ships calling for Russian exports. Some of these industries were destroyed during the war, and those which remained declined in importance, due to the reduction in trade and the elimination of most of the Russian markets. A few textile, metallurgical and specialty industries remain, but their importance is slight. Most of the present industrial activity is concerned with the preparation of foodstuffs and the manufacture of wood pulp, paper, matches and other wood products.

### COMMERCE

As might be expected from their resources and activities, the Baltic States export chiefly agricultural and timber products. Manufactured goods make up the greater part of their imports, although some foods

and raw materials also have to be imported. Of the three countries, only Lithuania has had a favorable balance of trade within the past few years. Germany occupies the leading position as a source of imports, and is also the leading market for the exports of Lithuania. The United Kingdom slightly exceeds Germany as a market for the products of Estonia and Latvia.

As has already been noted, Estonia and Latvia contained the principal Baltic ports of pre-war Russia. Considerable Russian trade still passes through these ports, although, due to the policy of economic



The port of Klaipėda (Memel). (Courtesy of the Consulate General of Lithuania, New York.)

nationalism adopted by the present Russian government, much of that country's trade has been diverted to Leningrad. Formerly many of the imports for the Leningrad district came in through Tallinn and Baltiski (Port of Baltic). Today the former handles some 75 per cent of the trade of Estonia, but most of the Russian trade comes in through the port of Leningrad. Riga, Liepāja and Ventspils formerly handled much of Russia's Baltic export trade, and Russian exports still use these ports, although to a declining extent. Riga, however, handles over 60 per cent of the trade of Latvia. Klaipėda is the only important port of Lithuania. It handles most of the trade of that country, and if friendly relations between the two countries are established, it should handle much of the trade of northern Poland.

In comparison with their population, both Latvia and Estonia have

important and growing merchant marines. Fishing is engaged in by all three states, and has served as a training school for sailors and as a stimulus for the expansion of merchant shipping.

### FINLAND (SUOMEN TASAVALTA)

Located in the midst of an unfriendly environment, and bordered by powers which have frequently been hostile, the Finns have had to face a continual struggle for existence. The Arctic Circle bisects the country, the old hard rocks of which the land is formed weather into poor soils, and during the winter ice-bound harbors bring near isolation. Truly it is a region in which only an industrious and capable people could survive and prosper. But the problems of the Finns have been rendered even more difficult by the activity of their neighbors. Both the Russians and the Swedes have invaded the territory and held it for long periods, but in spite of all of these handicaps, the Finns have developed an advanced civilization and a progressive nation.

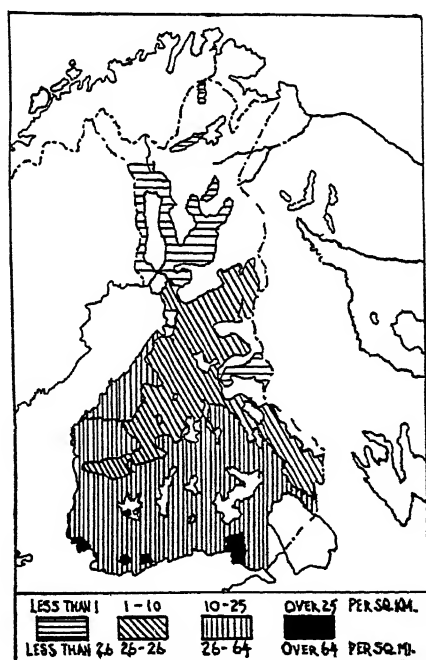
### HISTORY

The Finns came from the Asiatic steppes by way of central Russia. Their migration into the region which they now occupy probably began in the fourth century, and by A.D. 700 they were in complete possession of these territories. Their attacks on the Swedish coast resulted in conquest by the Swedes in 1157. The Finns regained their independence, but during the twelfth and thirteenth centuries a series of Swedish invasions resulted in Finland again being conquered. The Swedes brought with them Christianity and civilization, and contributed much to the cultural and economic life of the country. However, the conquest of Finland resulted in almost continuous wars between Sweden and Russia, in the course of which Finland was constantly devastated. Russia was finally successful, and in 1809 it secured possession of the whole of Finland and the Åland Islands. Finland was granted autonomy, and became a semi-independent Grand Duchy, with the Tsar as Grand Duke. This condition existed until the end of the nineteenth century, when Nicholas II abrogated the privileges of local self-government and began an active effort to Russianize the Duchy. In spite of the bitter opposition of the Finns, this program continued intermittently until the collapse of the Russian Empire. In 1917 Finland became an independent republic, and although at first internal strife led to some difficulties, it has become a stable and progressive state.

The only change in territory since that time has been the addition of the Åland Islands in 1922. They had been held at various times by Russia and Sweden, and were of considerable strategic importance due to their control of the entrance to the Gulf of Bothnia and their relation to the Swedish and Finnish coasts. Although their population is largely Swedish and they were desired by Sweden, the League of Nations granted them to Finland, with restrictions as to their military use.

#### POPULATION

The Finns are not related racially to either the Teutonic or the Slavic peoples, but are members of the Finno-Ugrian racial group.



The distribution of population in Finland. (After Bowman, modified.)

Originally Asiatic nomads, they settled down as agriculturalists, woodsmen and traders, and have adopted European civilization. Physically they are short in stature, but are a strong, hardy people. Temperamentally they are industrious, hospitable and faithful, but somewhat stolid. However, they are most distinguished by a keen sense of personal freedom and independence. Education is usually well developed, and the people are culturally advanced.



Some 88 per cent of the population are Finns, 11 per cent are Swedes, and there are small minority groups of Russians and Germans. In the north there are also some 1300 Lapps living a migratory type of existence in the Arctic tundra.

**Numbers and Distribution.**—In 1930 the estimated population of the country was 3,658,000, or approximately the same as that of the State of Missouri. This resulted in a density of only 27.6 per square mile, which is less than any other European country except Norway. Despite its low population density, its unfavorable environment has made Finland an exporter of men. The distribution of population is far from uniform, the great majority of the people living southwest of a line drawn from the head of the Gulf of Bothnia to the northern end of Lake Ladoga. Southwest of this line a large portion of the country has a population density of 95 per square mile, while northeast of it densities of less than 1 per square mile are not uncommon. As some 69 per cent of the working population are engaged in agriculture and forestry, towns are of but slight importance, and 84 per cent of the people are classified as rural. Helsinki (Helsingfors), the capital, is the only large city, and it boasts a present population of some 235,000.

TABLE 116  
OCCUPATIONS OF THE POPULATION OF FINLAND  
(U. S. Department of Commerce)

Occupation	Percentage of Total
Agriculture and lumbering.....	68.9
Manufacturing.....	12.8
Commerce and transportation.....	6.0
Professions.....	1.7
All others.....	10.6
Total.....	100.0

#### SITUATION AND BOUNDARIES

Finland lies roughly in the same latitude as Alaska, being entirely north of the sixtieth parallel. Over one-third of its area lies to the north of the Arctic Circle, and it has a small strip of coast along the Arctic Ocean. In spite of the modifying influence of the surrounding bodies of water and the southwest winds, this far-northern location limits habitation to the southern portion of the country, and restricts the usefulness of its inland waterways and harbors. No other progressive people except the Icelanders live as far north as do the Finns.

The influence of its location between the Scandinavian Peninsula and Russia is more political than economic. Comparatively little trade

flows between these two areas, so that its position as a transit zone is of slight importance. It does, however, separate the Teutonic and Slavic peoples, and has therefore been a zone of conflict throughout its history. Culturally it has drawn its greatest contributions from the west, especially from Sweden. Economically, however, it belongs to the east, due to the dominance of agriculture and the extractive industries.

The Arctic Ocean, the Baltic Sea and the Gulfs of Bothnia and Finland form its only natural boundaries, and even these have been imperfect as far as the separation of peoples is concerned. The Swedes used the Gulf of Bothnia and the Baltic as avenues of expansion, and established many settlements along the Finnish coast. The land boundary separating the country from Sweden and Norway follows the course of such rivers as the Tornio, the Muonio and the Tana. These form imperfect barriers, but as the boundary passes through almost uninhabited sections, it furnishes no serious problems. The Russian border, on the other hand, is largely arbitrary, following no natural barriers and being drawn largely on the bases of ethnic differences and political expediency.

#### CLIMATE

In spite of its northern location, the bordering bodies of water and the southwest winds modify the climate of Finland, and make the southern portion of the country suitable for human habitation. The average temperature is some 10 degrees warmer than is normal for these latitudes. Nevertheless, the summers are short, and the long, cold winters increase in severity toward the north and east. Rainfall seldom exceeds 25 inches in the south, and decreases to some 10 inches in the extreme north. Along the coast the maximum rainfall comes in the autumn, but in the other sections of the country the heaviest fall is in the summer. Snow covers much of the country from November to April, the heaviest fall coming in March, just in time for the sudden spring thaws to make the moisture available for agriculture.

The severe climate restricts agriculture to the south and southwest, but favors the growth of coniferous forests throughout most of the country. In the extreme north, a section of treeless tundra stretches to the Arctic.

The cold winters cause all inland waterways to be blocked by ice for at least 150 days each year. On the Gulf of Finland ice interferes with navigation from December to April, and along the coast of the Gulf of Bothnia the ice lasts for about a month longer. Turku (Åbo)

and Hanko (Hango) are the ports least handicapped by ice, and they are frequently kept open by the use of ice breakers. The warm waters of the North Atlantic Drift keep the Arctic port of Petsamo (Pechenga) open throughout the year, but its isolation from the settled portions of the country prevents it being used.

#### SURFACE FEATURES

Physically, Finland is closely related to Scandinavia, as it consists of the same ancient rocks which occupy that peninsula. Here they have



Finland is a country of lakes and forests. It contains some 100,000 lakes. (Courtesy of the Consulate General of Finland, New York.)

been worn down to a low plateau or peneplain, covered with minor surface features which are the results of glaciation. As in the Laurentian Plateau of North America, the ice has removed much of the original soil and left a coarse morainic covering, with many swamps, indefinite drainage, and a complex network of lakes and rivers.

The name Finland (fen land) is aptly applied to a country having about one-third of its area covered with bogs, marshes and lakes. It contains some 100,000 lakes, which occupy approximately 11 per cent of its area. Many of these are very small, but in the southeast occurs the Saima lake system, which covers 2500 square miles and is one of the largest in Europe. Natural waterways connect many of the lakes, but where these are lacking canals, frequently of ancient origin, provide

the necessary connections. These waterways were for a long time the only avenues of communication in the country. Consequently settlements sprang up beside them, and the population moved up the river valleys and around the margins of the larger lakes.

Underlying hard rock and glacial features are common to the country as a whole. Nevertheless, it may be divided into two fairly distinct regions by a line drawn from the head of the Gulf of Bothnia to the northern end of Lake Ladoga. North of this line the country is hilly, varying from 500 to 4000 feet in elevation. This is a region of tundra and forest, and is sparsely populated. South and west of this line the land slopes gently to the southwest, and is covered with numerous lakes and rivers. Here one-fourth of the country is covered with lakes connected by short, rapid streams, some of which are navigable. Here also better soil, more moderate climate and accessibility to the coasts have led to the greatest concentration of population.

#### AGRICULTURE

The fact that much of the country is covered with poor soil, combined with the short growing season, limits the agricultural possibilities of Finland. Although over two-thirds of the population is engaged in agriculture, only 6.4 per cent of the land is under cultivation, while 3.4 per cent is in permanent meadow and pasture. There is a possibility for some extension of the cultivated acreage, but it will require a considerable investment of capital, as the cost of clearing land is high and large applications of fertilizers are required. Under these circumstances, it is not surprising that the country is unable to supply its own needs for food, and that one-fourth of all imports consist of meat, grains and other foodstuffs.

Most of the cultivation takes place on the clay plains along the coast, or along the river valleys and lake margins. Here the hardy Finnish farmers live in isolated farmsteads, and industriously cultivate their small fields of grain and potatoes, or tend their dairy herds. Rye and potatoes are the principal food crops raised, and both are increasing in importance. With the rise of the dairy industry, much attention is being given to hay and oats, and these two crops occupy the largest acreage at present. Barley was formerly a favorite crop, as it could be grown farther north than any other, but recently it has been replaced where possible by rye or oats. Some flax is grown around

Tampere (Tammersfors), and the acreage devoted to sugar beets is increasing in the south.

TABLE 117  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN FINLAND  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as indicated)	
	Average 1909-1913	Average 1927-1930	Average 1909-1913	Average 1927-1930
Rye.....	589	562	10,478	12,781
Wheat.....	8	47	136	1,086
Barley.....	278	271	4,804	6,182
Oats.....	999	1,132	24,752	40,572
Potatoes.....	182	175	16,716	27,719
Flax.....	...	13	4,244 <sup>a</sup>	3,538 <sup>a</sup>
Hay.....	...	2,306	1,066 <sup>b</sup>	2,626 <sup>b</sup>

<sup>a</sup> Unit, pound of fiber.

<sup>b</sup> Unit, metric ton.

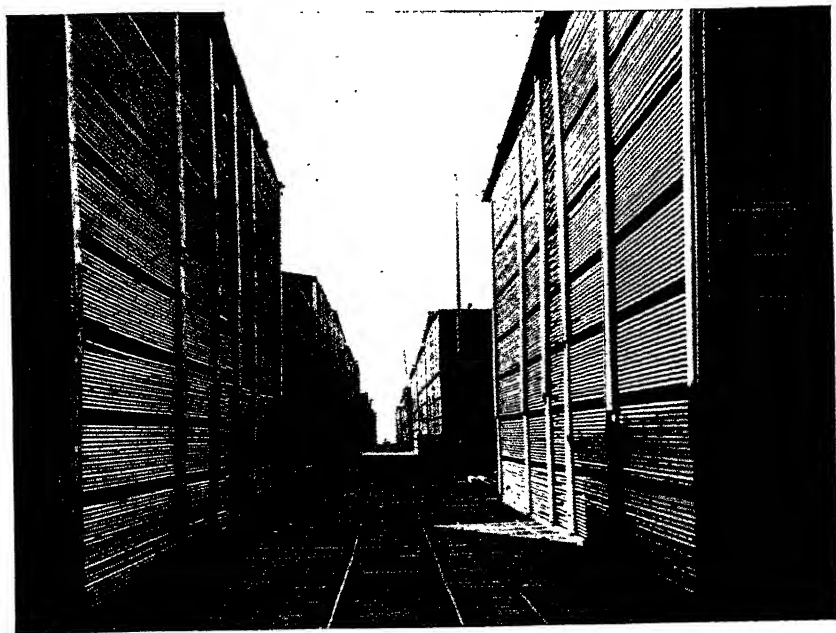
Within recent years the dairy industry has been increasing rapidly in importance. While the soil and climate are unfavorable for the growth of food crops, they are well adapted to hay and other forage crops. The Finns were quick to recognize and take advantage of this fact. They introduced an advanced system of agricultural education, developed cooperative societies, and improved the quality of their cattle. As a result, a dairy industry has grown up which not only supplies the domestic demand, but furnishes exports to the value of over \$12,000,000 annually. The rearing of beef cattle and horses is also increasing, while in the north the Lapps depend upon the reindeer for much of their food and clothing.

TABLE 118  
NUMBER OF LIVESTOCK AND OUTPUT OF DAIRY PRODUCTS IN FINLAND  
(U. S. Department of Commerce)

Kind	1910	1923	1929	Year	Butter, 1000 lb.	Cheese, 1000 lb.
Cattle.....	1,606,087	1,864,645	1,902,600	1911-1915..	28,688	4,396
Sheep.....	1,329,692	1,549,994	1,310,000	1923.....	28,058	6,717
Swine.....	422,284	281,715	426,000	1928.....	46,810	10,037
Horses.....	366,009	400,239	394,850	1929.....	54,409	10,298

## FISHING

The inability of agriculture adequately to supply the needs of the population for food, the long and indented coast line, and the presence of abundant fish in the lakes and in the waters of the Baltic gave the Finns an early interest in the fishing industry. Today two-thirds of the catch comes from the Baltic, and consists largely of herring. The fishing industry has not only added to the food supply of the nation, but, by training sailors and creating an interest in the sea, it has encouraged the construction of a Finnish merchant marine, which today totals 313,000 tons.



Lumber awaiting shipment at Kotka on the Gulf of Finland. (Courtesy of the Consulate General of Finland, New York.)

## RESOURCES AND INDUSTRIES

Forests not only are the principal resource of Finland, but they form the basis of most of its industry and trade. Slightly over 60 per cent of the total area of the country is forested, and about half of these forests consist of pine. This is cut in the winter and floated down to the mills near the river mouths, where it is turned into sawn timber.

The fir ranks next in importance, and furnishes the raw material for a large pulp and paper industry.

More than one-sixth of the total cut of some 2,500,000,000 board feet is exported. Until recently, most of this was sent abroad in the form of logs or rough sawn timber. More recently, however, there has been a rapid development of industries turning out such products as pulp, paper and veneers. Today the industries using wood as a raw material form the most important element in the industrial life of the nation. In 1929 they provided employment for 43 per cent of all industrial employees, furnished 43 per cent of the gross value of all manufacturing, and provided 84 per cent of all exports. The other industries of the country are varied, and are concerned chiefly with the preparation of textiles and food products for the domestic market. Tampere, with its more humid climate, is the principal textile center. Sawmills and pulp and paper mills are located near the southern and western coasts, and especially around Viipuri (Viborg), the outlet of the Saima lake region.

TABLE 119  
INDUSTRIAL PRODUCTION IN FINLAND  
(U. S. Department of Commerce)

Product	1914	1926-1930
Wood pulp, mechanical, met. ton. . . . .	142,801	309,199
Wood pulp, chemical, met. ton. . . . .	138,832	570,339
Paper, 1000 pounds. . . . .	360,269	649,698
Cardboard, 1000 pounds. . . . .	75,075	114,533
Lumber, undressed, million bd. ft. . . . .	1,195	2,254
Lumber, dressed, million bd. ft. . . . .	49	108
Cotton yarn, 1000 pounds. . . . .	5,115	16,410
Matches, 100 boxes. . . . .	214,219	509,584
Margarine, 1000 pounds. . . . .	1,385	19,078

The absence of coal makes Finland's second resource, water power, of special importance. The glaciated surface of the country increases the amount of this resource, and renders its exploitation relatively easy. The numerous lakes serve as natural storage reservoirs, and the falls and rapids where the streams flow through or over the morainic dams provide sufficient fall. The potential power of the country is variously estimated at from 1,800,000 to 3,000,000 horsepower, and it is said that this could easily be increased to 11,000,000 horsepower by the construction of artificial reservoirs. Some 250,000 horsepower were developed in 1930. This power is used extensively by sawmills, pulp and paper mills, and railways, and for domestic purposes. The state has

planned and has under construction projects which will materially increase the output of this resource, and reduce the amount of coal imported. The future industrial life of Finland will be based largely upon the use of its two great resources, forests and water power.

#### COMMUNICATION

Nature has provided Finland with numerous inland waterways, but has rendered land communication difficult. The lakes and swamps, the severe winters, and the sparse and scattered population complicate the problems of rail and highway transportation. Nevertheless, the country has 3311 miles of railways, which is a small amount per square mile, but which places Finland among the leading European nations in the amount per capita. Although there are some 47,000 miles of inland waterways, only 2500 are usable for anything except the floating of timber. Even the more important waterways are declining in use, and the tendency is for more and more freight to move by rail. Nearly all the railways and most of the highways and navigable inland waterways are located south and west of the line from the head of the Gulf of Bothnia to the northern end of Lake Ladoga. Sparse population and physical difficulties cause transportation to be undeveloped in the north.

Most of the foreign trade of Finland moves by sea. Viipuri is normally the greatest exporting port, and its contact with the Saima lake district makes it one of the greatest timber-exporting ports in the world. Helsinki is the leading important port, and the fact that ice breakers can frequently keep it open in the winter adds to its importance. However, Hanko and Turku are the great winter ports, as they are least hampered by ice.

#### FOREIGN TRADE

The necessity for importing foods and other raw materials, and for exporting timber products in exchange, has resulted in a fairly large per capita foreign trade for Finland. In fact, it ranks nearly on a par with Germany and France in this respect.

As has been indicated by the survey of the economic life of Finland, timber and dairy products make up the largest proportion of the exports. Timber and products manufactured from timber make up 84 per cent of all goods sold abroad, and dairy products make up 10 per cent. Imports are made up of foodstuffs, 24.8 per cent; machinery and



other production goods, 15.7 per cent; raw materials, 37.6 per cent; and manufactures for consumption, 21.9 per cent. Iron and steel, machinery, flour, and wool fabrics are the leading single items. The United Kingdom is the greatest market for Finnish exports, while Germany ranks as a rather poor second. The order is reversed in the case of imports, Germany furnishing nearly three times as much as the United Kingdom, its nearest rival. In spite of its large exports of timber products, the country has had an unfavorable balance of trade during most of the years since it received its independence. This unfavorable balance has not been large, and has usually been counterbalanced by such invisible exports as immigrants' remittances and the earnings of the merchant marine.

## BIBLIOGRAPHY

### THE NEW BALTIC STATES

- Buchan, J. (ed.), *The Baltic and Caucasian States*, The Nations of Today Series, Houghton Mifflin Company, New York, 1923.
- d'Almeida, P. C., "États de la Baltique—Russie," *Géographie Universelle*, Librairie Armand Colin, Paris, 1932, Tome 5.
- Eickholz, A. C., "The Baltic States, Estonia, Latvia and Lithuania," *Trade Information Bulletin No. 569*, U. S. Department of Commerce, Washington, 1928.
- Harrison, E. J., *Lithuania, Past and Present*, T. Fisher, Unwin, Ltd., London, 1922.
- Pullerits, A., *Esthland*, Kluge & Ströhm, Tallin, 1931.
- Spaull, H., *The Baltic States: Latvia, Lithuania and Estonia*, A. & C. Black, Ltd., London, 1931.
- Van Cleef, E., "Some Economic Problems in the Baltic Republics," *Geographical Review*, 1927, vol. 17, pp. 434-447.

### FINLAND

- Atchley, T. W., *Finland*, Sidgwick & Jackson, Ltd., London, 1931.
- Eickholz, A. C., and Rodeck, H., "Finland; An Economic Review," *Trade Information Bulletin No. 681*, U. S. Department of Commerce, Washington, 1930.
- Finnish Central Statistical Bureau (ed.), *The Republic of Finland, an Economic and Financial Survey*, Helsinki, 1920.
- Fox, F., *Finland To-day*, A. & C. Black, Ltd., London, 1926.
- Grotenfelt, K., et al., *Finland—The Country, Its People and Institutions*, Olava Publishing Co., Helsinki, 1926.
- Kekich, E. A., "Forest Policy of Finland," *Trade Information Bulletin No. 408*, U. S. Department of Commerce, Washington, 1926.
- Kekoni, K., "The Ports of Finland," *Economic Geography*, 1932, vol. 8, pp. 217-244.

- Nordenskiöld, E., "Finland: The Land and the People," *Geographical Review*, 1919, vol. 7, pp. 361-376.
- Numelin, R., *Some Aspects of the Geography of Finland*, Government Printing Office, Helsinki, 1925.
- Ohde, T., *Finland, a Nation of Co-operators*, translated by John Downie, Williams & Norgate, London, 1931.
- Oxholm, A. H., "Forest Resources, Lumber Industry and Lumber Export Trade of Finland," *Special Agents Series No. 207*, U. S. Department of Commerce, Washington, 1921.
- Reade, A., *Finland and the Finns*, Dodd, Mead & Co., Inc., New York, 1917.
- Soderhjelm, W. (ed.), *Finlande et Findlandais*, Librairie Armand Colin; Paris, 1913.
- Van Cleef, E., *Finland—The Republic Farthest North*, Ohio State University Press, Columbus, 1929.

## EUROPEAN RUSSIA: UNION OF SOCIALIST SOVIET REPUBLICS (SOYUZ SOVETSKIKH SOTSIALISTI- CHESKIKH RESPUBLIK)

MONOTONY and vastness are the characteristic qualities of European Russia. Nature has conspired in this connection by preparing an environment gigantic in size, but characterized by an unusual degree of uniformity. The country is one vast and featureless plain, stretching from the Carpathians to the Urals and from the Caucasus to the Arctic. With its long, cold winters, short, hot summers and scanty rainfall, nature has provided a climate which nearly matches the relief in its lack of variety. Even the zones of vegetation partake of the same qualities. From the White Sea and the Gulf of Bothnia, the world's greatest remaining forest stretches to the Urals and then eastward through Siberia to the Pacific. In the south, extending from the Dnestr (Dniester) through the Ural-Caspian Gap, is a mighty area of open steppe, where on all sides the land moves to meet the horizon unbroken by trees and, frequently, by human habitation.

Little wonder that man reflects the mood of nature, and presents an almost uniform response to this monotonous environment. Some 86 per cent of the vast population of 128,800,000 are uneducated peasants living in little villages, and cultivating their land in the same primitive ways as their fathers did. Incorporating something of both the east and the west in their ethnic and cultural background, this mass formed the plodding Russian Giant which for centuries supported and obeyed the commands of one of the most ruthless aristocracies that the world has ever known. But at last aroused, the giant shook off his former masters and surprised the world by becoming the disciple of a new social and economic philosophy. As yet, in spite of this stupendous change, the life of the average Russian peasant goes on much as before. Spending his entire effort in a sometimes futile attempt to provide sufficient food to support life, not understanding and being largely uninterested in the affairs of others outside of his own district, he seems an individual separate and apart from the rest of the Europeans.

## HISTORY

For centuries the Russians were an interior people having less contact with the rest of Europe than with Asia. They seem to have had their original center near the Valdai Hills, but, in spite of favorable relief and river arteries leading in all directions, they did not reach the sea for centuries, nor did they have direct land contacts with the more highly civilized portions of the continent. At the same time the absence of relief barriers and the presence of the Ural-Caspian Gap left the country open to invaders from the Asiatic steppe. Hun, Vandal, Magyar, Bulgar and Finn all crossed it, and for a time occupied portions of the country. All of these peoples left their imprint on the population and culture of Russia. They brought with them Asiatic ideas and ideals and turned the attention of the Russians eastward rather than toward the rest of Europe.

Gradually the rising power of the Muscovite princes threw off the yoke of the Tartar, and enabled the Russians to follow their normal avenues of expansion. Moving northward by way of the river valleys and Lakes Ladoga and Omega, they reached the White Sea and the Arctic. Under Ivan III these northern conquests were extended eastward as far as the Urals. Gradually, also, these people moved down the valley of the Volga to the Caspian, and by 1584 had spanned Europe from north to south. Neither of these seas provided any contacts with the west, and the country still remained isolated. It was not until Peter the Great added the Baltic Province, and Catherine II acquired territory linking the Black Sea and the Baltic, that Russia had outlets on bodies of water which gave it contacts with the centers of European civilization.

This isolation kept Russia backward, while its eastern contacts preserved many Asiatic elements in its culture. Thus serfdom continued until 1861, and the peasants were little better than serfs until the beginning of the present century. Discontent was growing among the masses, but was ineffective until the inefficiencies and losses during the World War enabled them to overthrow their rulers in 1917. At first they sought to set up a republic, but the absence of a middle class and the lack of education among the lower classes rendered such an attempt futile. Instead, the more radical elements of the workers assumed control, and have retained it ever since.

## POPULATION

In 1931 European Russia had an estimated population of 128,800,000, which gave it a density of 56 per square mile. This is somewhat greater than the population density of the United States, which amounted to 42 per square mile during the same year. The distribution of population is largely determined by the suitability of the soil and climate for agriculture. Certain sections of the Black Earth region have 250 people per square mile, while nearly all sections of this fertile area have more than 175. The forest district, on the other hand, has a density of only 15 per square mile, and the dry steppes, only 3. If a triangle were drawn with its corners at Leningrad, Odessa and Ufa, it would be found to contain over 80 per cent of the population of European Russia. Within this area the population density is comparable to that of many western European countries, but outside it the density is very slight. North and northeast of this triangle the short growing season and poor soil limit agriculture, while to the south and southeast this activity is limited by the lack of rainfall. Although for the country as a whole the density per square mile is low, this condition is gradually being changed, due to the fact that the population of Russia is growing more rapidly than that of any other European country.

As agriculture is the predominant activity, urban centers are of comparatively slight importance. At present, 80.9 per cent of the population is classified as rural. According to the 1926 census, there are in the entire country 27 cities with a population of over 100,000, and 2 with a population of over 1,000,000. Compared with this, the United States has 93 cities with a population of over 100,000, and 5 with a population of over 1,000,000. Due to the small urban population, the civilizing influences which frequently emanate from cities are of relatively slight importance.

TABLE 120  
OCCUPATIONS OF THE GAINFULLY EMPLOYED POPULATION  
OF RUSSIA

(U. S. Department of Commerce)

Occupation	Percentage of Gainfully Employed
Agriculture.....	86.7
Mining and manufacturing.....	6.1
Commerce and transportation.....	3.0
All others.....	4.2
Total.....	100.0

**Racial Groups.**—At present, European Russia is quite homogeneous racially. Its population is made up primarily of Great Russians, Little Russians or Ukrainians, and White Russians. All three groups are Slavic, but they differ somewhat culturally. The White Russians form the smallest group and, despite their location nearer the western people, are the most backward. They occupy the lakes and marshland of the western Dvina and the Upper Dnepr. They thus border Poland and Lithuania and form minority groups in each of these countries. The Great Russians constitute over half of the total population. They originally inhabited the central forest lands, with Moskva as their capital, but later moved down the valley of the Volga until they reached the Caspian and Black Seas. They are more advanced culturally and economically than the White Russians, but less so than the Little Russians. The latter occupied the rich Black Earth lands of the Ukraine, spreading from there northwestward to the forests and southeastward to the dry steppes. Occupying the richest grain lands and those best endowed with iron and coal, and having the Black Sea as an outlet, it is not surprising that they are the most advanced of the Russian peoples. The most important minority groups are the Tartars, Jews and Germans. The Tartars occupy sections of the middle Volga and the Krim (Crimea) Peninsula. Until recently, the Jews have been primarily dwellers in the cities of western Russia. Recently, however, the government has encouraged their settlement on the land, especially in the Krim Peninsula. The Germans occupy extensive areas of agricultural land along the lower Volga, and are represented in almost all the larger Russian cities.

#### SITUATION AND SIZE

Most of European Russia lies between 45 and 70 degrees north latitude. Corresponding latitudes in North America extend from Minneapolis to the northern coast of Alaska. This northern location, combined with the distance from the sea, gives the greater portion of the country a severe continental climate, with rainfall decreasing toward the southeast. Thus, despite its huge size, only a relatively small portion of the country has a climate suitable for the support of a dense population.

Occupying the eastern half of Europe and situated in the high latitudes, Russia is isolated from the Atlantic and the more important European seas. The Arctic and White Sea coasts are of little value, due to their distance from the more populated centers of the country,

and to the fact that they are closed by ice for considerable periods each year. The only contact which Russia has with the Baltic is through the port of Leningrad on the Gulf of Finland. Despite the use of huge ice breakers, this port is frequently closed for a considerable period during the winter. The Black Sea ports are well situated to handle the trade of the most active section of the country, and are seldom handicapped by ice. Nevertheless, the World War illustrated how effectively this sea can be bottled up by a hostile power controlling its outlet. Consequently, Russia's sea contacts with western Europe and with other portions of the world have been and are limited, a fact which helps to account for the economic and cultural backwardness of the country. Little wonder that the search for an ice-free and uncontrolled port has been a perpetual element of Russia's foreign policy.

The Russians expanded throughout their great plain until they met natural barriers or a people strong enough to resist their advances. The present boundaries of the nation are thus natural and historical. On the north the Arctic Ocean provides the only true natural boundary of any extent. Toward the south the Black Sea, the Caucasus and the Caspian may be regarded as forming natural frontiers, but Russia has expanded beyond the Caucasus, and its boundary there is the result of historical forces. The western frontier is purely the result of historical changes, and has from time to time been advanced and withdrawn in accordance with the dictates of war and peace. Toward the east the Russians encountered no serious physical obstacle and no powerful and dense population. The slopes of the Ural Mountains are so gradual that they offer little handicap to human movement, and in the Ural-Caspian Gap natural barriers are entirely lacking. It is accordingly not surprising that Russia experienced its greatest expansion toward the east. In one of the most stupendous migrations that the world has ever known, the sturdy Russian peasants pushed eastward until they reached the Pacific, while Russian traders went even farther and occupied Alaska. Today the Pacific constitutes the eastern boundary of the nation, while to the southeast expansion still continues in outer Mongolia.

**Size.**—Russia has expanded until it occupies 8,244,266 square miles, or approximately one-sixth of the land area of the earth. It thus constitutes the greatest continuous empire on the earth's surface. Some 5,928,000 square miles of the nation's territories lie in Asia, while 2,316,000 square miles lie in Europe. European Russia thus occupies more than half of the entire area of the latter continent, and is slightly over three-quarters the size of the United States. Such a large area involves tremendous distances, and thereby influences man, for great

distances cause profound isolation. Towns are far apart, and transportation is difficult. The exchange of ideas or goods is thus restricted, a factor which is in part responsible for the economic and cultural backwardness of the people.

### RELIEF

The greater part of European Russia consists of a vast, featureless plain. From the Baltic to the Caspian, from the White Sea to the Black Sea, and from the Carpathians to the Urals, there is no feature of sufficient prominence to break the monotony of the landscape. Even the belt of higher land which extends from the Valdai Hills south between the Dnepr and the Don, or the one which occupies the western bank of the Volga, seldom exceeds 1000 feet in elevation and has slopes so gradual as to be almost imperceptible.

The land is so flat that drainage is poor, and large areas of marsh lands exist. The same condition causes the rivers to meander and to be slow flowing. As they are closed by ice for long periods each winter and are low in summer, they form imperfect avenues of transportation. In the lower portions of the plain the rivers have eroded wide, gently sloping valleys, but in the higher elevations the principal streams have cut deep, steep-sided ravines which make them invisible from any distance.

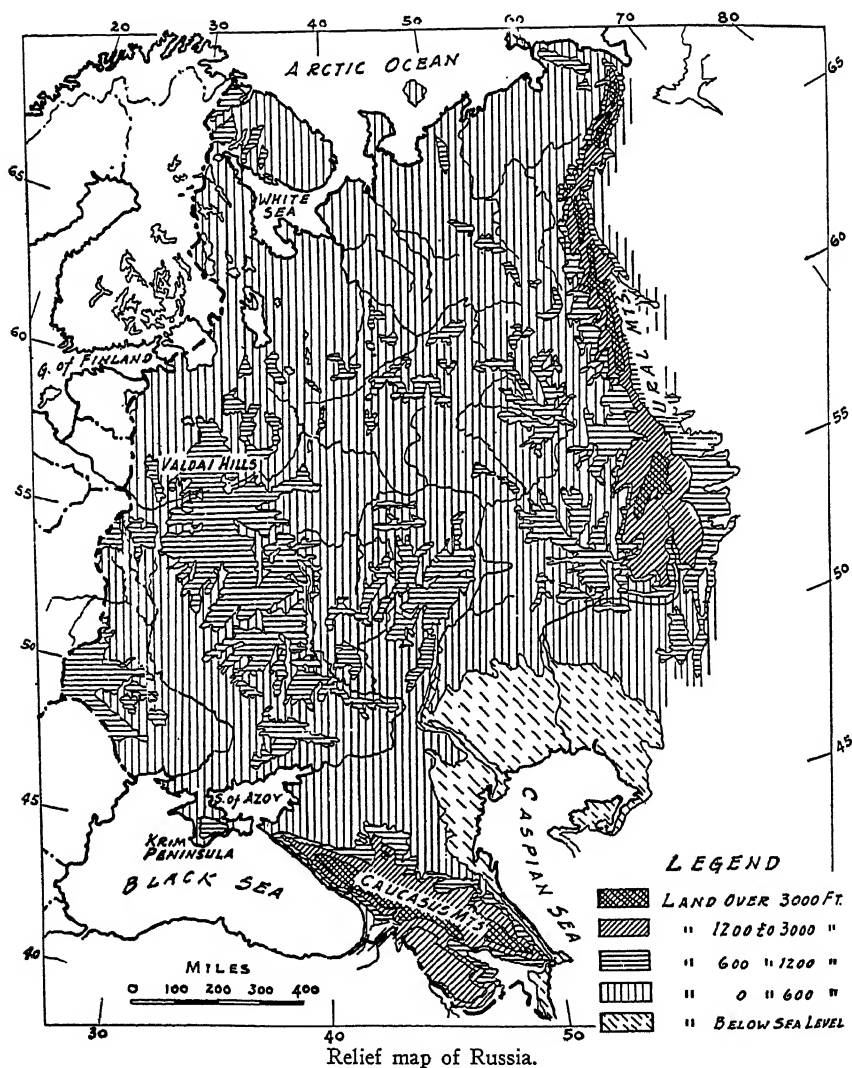
The fact that bed rock frequently lies at a considerable depth, and that the surface is often wet and marshy, makes the construction of roads and railways difficult and expensive. During the winter, however, when the land is frozen and snow covered, transportation is easy, and it is during that season that much of the communication between the villages takes place.

This unbroken monotony of relief leads to uniformity of human response, and has favored the intermingling of the various races represented until a definite Russian type has been evolved. It also encouraged the political expansion of Russia until all of the plain was incorporated within the state.

The portion of the plain north of 50 degrees north and west of 45 degrees east has been glaciated, and is covered with a thick mantle of clay and other glacial deposits, usually of low fertility. South of 50 degrees north, however, the land is covered with rich deposits of loess, made even more fertile by the addition of humus from the native grasses. The poor soils thus retard agriculture in the northern and



central parts of the country, while the fertile loess favors it in the south.



### CLIMATE

Uniformity of relief favors uniformity of climate, and this in turn favors vegetation zones that cover wide areas. In summer the west and southwest winds sweep in from the Atlantic, bringing moisture and some modification of temperature. However, the distance

from the ocean is so great that much of the moisture and moderating influence is lost before the Russian plain is reached. In the winter, on the other hand, the cold winds sweep in from the high-pressure center of south central Asia, bringing terrific storms and covering the entire land with snow. Thus there is a surprising uniformity of climatic conditions, the average annual temperature not varying more than 20 degrees between the extreme north and the extreme south, despite the great distances involved.

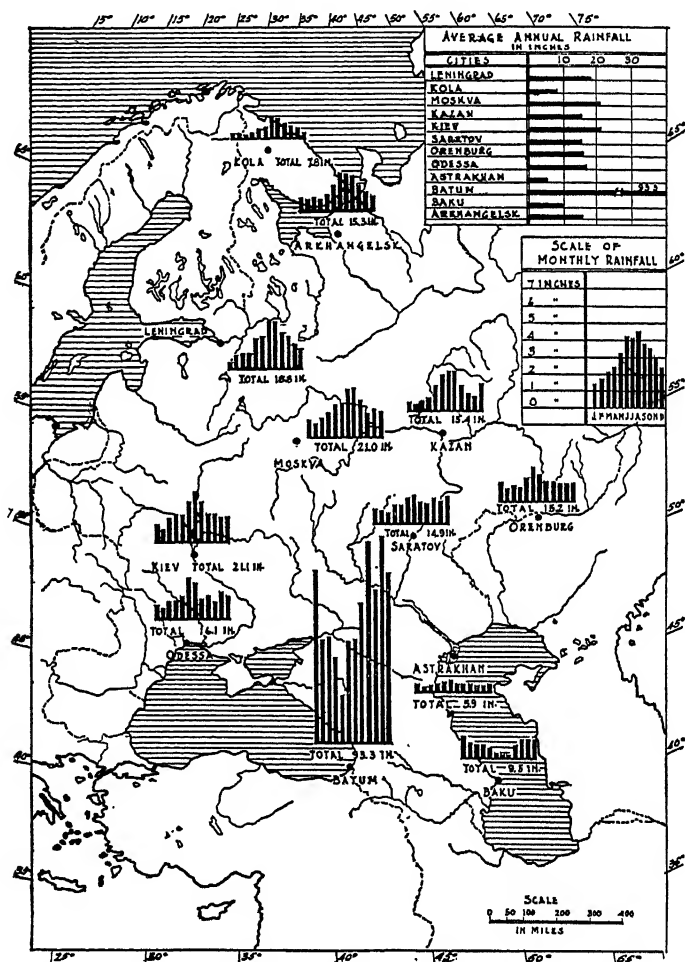
**Temperature.**—The Russian plain has a continental climate, with wide seasonal variations in temperature. The winters are long, dark and cold, while the summers are short and usually hot. The summer isotherms follow their normal east and west direction, but the winter isotherms run from northwest to southeast. Thus seasonal extremes increase from west to east, while the average annual temperature increases from north to south. Also due to its northern location, the temperatures of the entire plain are distinctly low and the growing seasons short. Arkhangelsk (Archangel) on the White Sea thus has an average annual temperature of 33 degrees Fahrenheit, Moskva in the central plain 39 degrees Fahrenheit, and Odessa on the Black Sea 49 degrees Fahrenheit. However, extreme temperatures in most sections of the plain reach 100 degrees Fahrenheit in the summer, and from 30 to 40 degrees below zero in the winter. These low average temperatures with wide seasonal variations create conditions which are unfavorable for many crops, and which are far from the human optimum.

TABLE 121  
MEAN TEMPERATURES (F.°) OF REPRESENTATIVE RUSSIAN CITIES<sup>1</sup>

City	January	July	Year	Range
Leningrad .....	15.3	63.9	38.7	48.6
Kola .....	16.8	54.1	30.7	43.3
Moskva .....	12.2	66.0	39.0	53.8
Kazan .....	7.2	67.8	37.4	60.3
Kiev .....	20.8	66.6	44.2	45.8
Saratov .....	11.5	72.1	42.1	60.6
Orenburg .....	3.4	70.9	37.9	67.5
Odessa .....	25.3	72.7	49.3	47.4
Astrakhan .....	19.0	77.9	48.9	58.9
Batum .....	43.0	73.4	57.7	30.8
Baku .....	38.1	78.8	57.9	40.7
Tiflis .....	32.4	76.1	54.9	43.7

<sup>1</sup> Kendrew, W. G., *The Climates of the Continents*, Oxford University Press, New York, 1927.

**Precipitation.**—Most of the rain is brought by the southwest winds during the summer and autumn months. Distance from the Atlantic reduces the moisture in these winds so that only the extreme western portion of the plain receives more than 20 inches annually. From here rainfall diminishes toward the north, east and south. To



Average monthly and yearly rainfall at representative Russian stations.

the north it reaches a minimum of 10 inches in the Arctic tundra. Toward the east it reaches a minimum of some 15 inches annually around Orenburg. The fact that much of it comes in the summer, combined with the slow evaporation, causes it to be sufficient for some crops. It is toward the southeast, however, that the reduction of rainfall has the greatest influence on man. Here lies the marvelously fertile

Black Earth region, the center of Russian agriculture. Nearly all of this section receives less than 20 inches of rain a year, the fall is uncertain, and droughts are frequent. The minimum rainfall, as well as the maximum rate of evaporation, is encountered in the low areas to the north of the Caspian Sea. Astrakhan, with an annual rainfall of 5.9 inches, may be taken as typical of this region. These conditions lead to the existence of the only true desert in European Russia or in Europe.

### GEOGRAPHICAL REGIONS

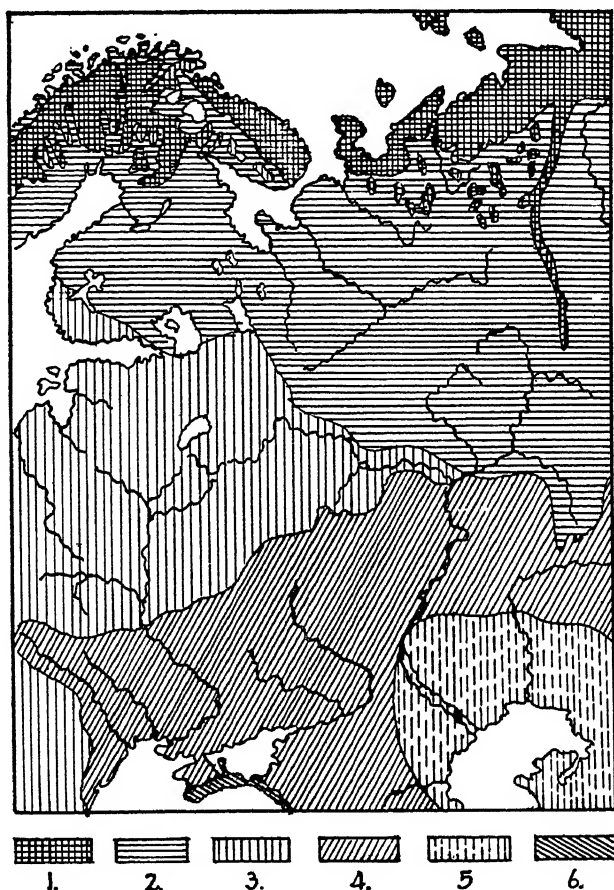
The monotony of relief prevents the formation of geographical regions based upon that factor. This same monotony, however, leads to strong climatic control over vegetation, and the creation of broad vegetation zones which provide the only basis for the division of the country into geographical units. In a region of such uniform relief and climate, these zones never have clear-cut boundaries, but merge into one another in broad transition belts. In Russia, where man is primarily occupied in agriculture and forestry, vegetation control is important, and these zones exercise a profound influence over human activity.

### THE TUNDRA

Between latitude 65 degrees north and the Arctic Ocean the winters are long and very severe, and the summers short and with temperatures a little above freezing. As a consequence, the land is always frozen to a considerable depth, only the top few feet thawing out in the summer. Deep-rooted plants cannot live, and the ground is covered with mosses, grasses and lichens. In addition to bordering the Arctic, the tundra extends south in the Urals, due to the influence of elevation upon temperature. A few nomadic Lapps and Samoyeds are the only inhabitants of the tundra, and the region is of very slight economic importance.

The North Atlantic Drift makes Mermansk on the Arctic the only ice-free port of northwestern Russia, but its distance from the more active sections of the country causes it to be but slightly used. Arkhangelsk, on the White Sea (Beloe More), is located on the border between the tundra and the forest zone, and is one of the most important lumber-exporting ports of Russia. It is located at the mouth of

the Northern Dvina, which is navigable for six months each year, and whose tributaries reach some of the most valuable timber lands.



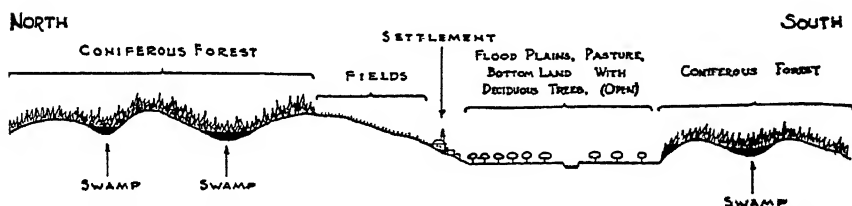
Vegetation zones in Eastern Europe. 1, tundra; 2, coniferous forest; 3, mixed forest; 4, grasslands; 5, steppes and semi-deserts; 6, Mediterranean vegetation. (After Newbigin.)

#### CONIFEROUS FOREST

From the tundra south to the latitude of Leningrad stretch Russia's vast forests of conifers. League after league of somber pines and firs extends from the Baltic to the Urals, and makes up 70 per cent of the forests of European Russia. Large portions of these forests are inaccessible and of no present value, but along the Northern Dvina and its tributaries and around the Russian lake district the sound of the lumberman's ax is never stilled, and from these regions an increasing

stream of timber is flowing out through the ports of Leningrad and Arkhangelsk to supply the needs of western Europe. To an increasing extent also, mills are being established near the mouths of the rivers to turn this timber into wood pulp, paper, or some other valuable form before it is sent abroad. Even without the introduction of modern forestry methods, the annual cut is but little more than half of the annual growth, so that production could be materially increased without any permanent injury to the forest. Such an increase, however, must depend largely upon improved transportation facilities which will make a larger proportion of the timber available.

Especially toward the west, clearings appear like islands within the forest. Here little clusters of wooden huts denote the location of agricultural villages. Surrounding them are the fields where the poverty-stricken Russian peasants seek to wring a living from the reluctant land. The short growing season and the long, dark winters restrict



North-south cross section through northern Russian forest belt. (After S. Passarge.)

the crops to such hardy ones as barley, rye, oats and flax, while the deficiency of humus and the coarse glacial soil make it impossible to cultivate the fields more than a few years in succession. Wide areas of glacial swamps and lakes complicate the problems of transportation, and the absence of large cities restricts markets. Thus the agricultural villages are, for the most part, limited to the areas along the few railways or along the through waterways.

Leningrad.—Leningrad, along the southern margin of the northern forest, is its only city of any importance. This has long been a site of considerable commercial importance. Located on the delta of the Neva, and therefore at the southern end of the lake district connecting the White Sea with the Gulf of Finland, the city naturally dominates the trade of that region. Furthermore, it is located where the route from the upper Volga connects with that from the Baltic. However, the construction of railways took away from it much of its trade with the lower Volga, and for a time it declined in importance. It is doubtful whether it would have attained anywhere near its present size had

not Peter the Great sought to turn the face of his country to the west by building his capital on this pile-studded marsh. It thus became the cosmopolitan capital of a great empire, and a city of wide boulevards, beautiful churches and magnificent palaces. It received a sad blow and declined rapidly in population when the present government returned the capital to Moskva. Today it is Russia's only outlet to the Baltic, and its commercial status has correspondingly improved.



Lumbering in Northern Russia. (Courtesy of Sovfoto.)

#### THE DECIDUOUS FOREST BELT OF CENTRAL RUSSIA

South of the latitude of Leningrad the forest changes. Occasional deciduous trees appear in the midst of forests of pine and fir. Gradually they increase in numbers until first they dominate, and then entirely crowd out the conifers. The resulting deciduous forest is a continuation of that of western Europe, and consists principally of oak, beech, elm and birch. It extends as far south as the latitude of Minsk, after which it gradually disappears, and the open steppes dominate the landscape.

The existence of deciduous forests is the result of warmer and slightly longer summers, and these conditions are reflected in a dif-

ferent human development. Unlike the northern forest belt, this region contains areas that are quite densely populated. Altogether, about one-third of European Russia's people reside here. In the south, and especially in a portion of the area to the west of Moskva, cleared land is the dominant feature of the landscape, indicating that agriculture is considerably more important than to the north. However, poor soils exist, causing the peasants to specialize in the same kinds of crops. Rye is the principal bread grain, and flax is the chief export crop, but they are raised in much greater quantities than in the coniferous belt. Here dairying also assumes major importance, and from here Russia normally exports many dairy products to western Europe. In the southern part of the region hemp is raised in sufficient quantities to place Russia first among the nations of the world in the production of this commodity. The character of the soil discourages large-scale agriculture, and this is primarily the land of the small peasant farmers. Tiny farming villages built around a church occur frequently. They are connected by roads which, during the spring and portions of the summer, are bottomless lanes of mud through which it is impossible to draw any wheeled vehicle, but which during the winter become firm highways of ice and snow over which the sleighs and sleds of the peasants speed easily and freely.

**Moskva.**—This belt is even more important for its industry than for its agriculture. Moskva, in the central part, is the greatest industrial center of Russia, and surrounding it are numerous smaller cities noted for their manufacturing and commerce. Moskva owed its original importance partially to its location on the Oka, a tributary of the Volga, and partially to the surrounding coal fields. Of no less importance was the fact that it was the center around which the Muskovite princes rallied to drive back the Tartars, and that its central position, equidistant from the four seas, made it an ideal political capital. Man added to its favorable location by making it the center of a rail net which radiates to all parts of European Russia. These factors have made it the industrial center of the country, and it was also the political center until Peter the Great established his artificial capital at Leningrad. Today it is again the political capital, and has become the largest city of the country, with a population of 2,781,000.

Industrially, it is especially noted as a cotton manufacturing center. Its large supply of cheap labor, its nearby coal fields, and the ease with which it can get raw cotton from the fields of Turkestan, make its location ideal for this purpose. It contains nearly four-fifths of the spindles of Russia, but is surpassed in weaving by Vladimir, located a



little to the east. In addition to cotton, Moskva spins and weaves considerable amounts of wool and linen. It is also noted for its hardware, but is surpassed in the production of this type of commodity by the neighboring city of Tula. The latter city has the advantage of greater local supplies of coal and closer proximity to sources of iron. These factors have made it the greatest Russian center for the manufacture of all types of hardware, especially small arms and munitions.

Near Moskva are four other cities of considerable importance, each of which has a population of over 100,000. Kalinin (Tver) to the northwest lies at the head of navigation on the Volga, and has been the center from which routes led from the Volga to Leningrad and Lake Ladoga. Yaroslavl to the north lies at the point where the route from Moskva to Arkhangelsk crosses the Volga. Maxim Gorki (Nizhni Novgorod), located at the junction of the Volga and the Oka, has long been an important commercial center, and was formerly the site of the greatest Russian fairs. Kazan located at the great bend of the Volga, was formerly a frontier post established for protection against the Tartars. More recently it has acquired importance from its location at the point where the rail line from Moskva to Asia crosses the Volga, and from the productiveness of the surrounding agricultural areas. These cities, together with Moskva and Tula, make up the chief population centers of the deciduous forest belt. They contain such large populations that, despite the wide areas devoted to agriculture, the belt is unable to supply its own needs for food.

#### THE BLACK EARTH REGION

**Agriculture.**—Toward the south diminishing rainfall causes a gradual disappearance of the forests. Instead, the country becomes a vast expanse of open grass lands which stretch from the Polish border to the deserts north of the Caspian. The grasses add abundant humus to the deep, rich loess soil, with the result that this is the most fertile portion of Russia. It is a region of light rainfall, almost no section having over 20 inches. In the western part the seasonal distribution of rainfall makes it adequate for crops during normal years, but unfortunately all years are not normal. Droughts occur periodically, and the resulting famines cause immense suffering. The rainfall declines to the east, and dry steppes and deserts replace cultivated lands near the lower Volga and around the Caspian. The western or most productive section of the Black Earth region is almost entirely included in the Ukraine.

The Black Earth region is the agricultural heart of Russia. Not only does it supply its own needs for food, but it produces a surplus to make up for the deficit in the forest belts, and it is the source of nearly all grain exports. Half of the barley, nearly half of the wheat, four-fifths of the sugar beets, and nearly two-thirds of the tobacco of European Russia come from this province. Here climate and soil favor large-scale production, and it is here that the Soviet government has made the greatest progress in the establishment of state and collective farms. Today such farms occupy over half of the agricultural



Tractors and drills on a Russian state grain farm to the north of the Caucasus.  
(Courtesy of Sovfoto.)

land of Russia. They mark a decided advance over individual peasant holdings, in that they involve scientific cultivation, fertilization and the use of agricultural machinery. In the past, in spite of the rich soil of this region, the production per acre was very low, due to the ignorance of the peasants. The new system of agriculture is designed to remedy this evil by educating the peasants. Part of the land used by the state and collective farms was taken from that already in use, and part was carved out of the uncultivated areas to the south and east, where rainfall was too uncertain to make individual cultivation profitable. In such a region the state, or, in fact, any large organization which has the financial strength to carry it over the lean years, can survive and prosper.

**Resources and Industries.**—In addition to being of agricultural importance, the Black Earth region contains valuable minerals. The coal fields of the Donets Basin have an area of some 16,000 square miles, and normally produce nearly 90 per cent of the coal of European Russia. This coal varies from anthracite to good bituminous, and there are neighboring fields of lignite. Part of it is used locally, part is shipped north to the Moskva industrial area, and an increasing amount is exported through the port of Rostov. Only some 150 miles away, at Krivoi Rog in the valley of the Ingulets, lie rich beds of hematite ore containing some 60 per cent iron. Much larger fields of phosphoric ores are located near Kerch on the Krim Peninsula. These deposits are being worked to an increasing extent, and at present furnish 70 per cent of the iron ore of Russia. The Black Earth region also contains valuable deposits of manganese, but they are less extensive than those at the base of the Caucasus.

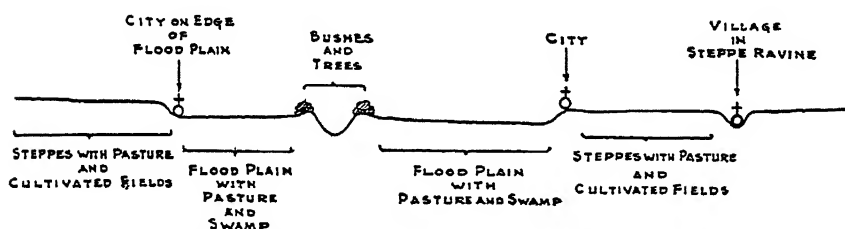
The existence of important deposits of coal and iron in close proximity causes such cities as Stalin, Kharkov, Dnepropetrovsk, Kherson and Kiev to produce 70 per cent of the pig iron, steel and agricultural machinery of Russia. The abundance of agricultural resources also makes this area the center of such activities as flour milling, sugar refining and distilling.

The Black Earth region, being the farming center of Russia and also containing important industries, has a relatively dense population, and these factors have led to the rise of several large cities. The largest is Kiev, which lies in the heart of the Ukraine at the junction of the Dnepr with its great tributary, the Desna. It is economically important for its manufacture of agricultural machinery. It has also long been the capital of the Ukraine, and is perhaps the oldest cultural center in Russia. Odessa was formerly the chief port of the Ukraine, and an important commercial center. Its progress was aided materially by its large and active Jewish population, but poor rail connections prevented it from advancing as rapidly as its rival, Vernoleninsk (Nikolaev). The latter city is located near the mouth of the Bug, and its excellent rail and water connections with the interior have given it first place as a Ukrainian port. Kharkov is the industrial center of the Donets area, and profits by the nearby coal fields. Rostov, at the mouth of the Don, is important as both a commercial and an industrial center, and it is normally the greatest wheat-exporting port of Russia. Dnepropetrovsk on the Dnepr is situated near the Krivoi Rog iron deposits, and is an important iron and steel center. The tremendous hydro-electric development on the neighboring rapids of the

Dnepr should add to its industrial growth. Altogether, the Black Earth region has eight cities with a population of over 100,000, but in spite of this the huge size of the section and its agricultural importance cause the great majority of its population to be rural.

#### THE SOUTHEASTERN STEPPES AND DESERTS

To the east of the Ukraine the diminishing rainfall causes both natural vegetation and human development to change. The close, humus-producing sod of the Black Earth region gives way to scattered bunch grass. The reduction in humus causes the soil to be lighter in color, although it is still very fertile. In order to take advantage of this fertile soil, the Russian peasant has extended cultivation as far eastward as the uncertain rainfall will permit. Thus there is a broad transition zone where the proportion of the land devoted to cultivation declines,



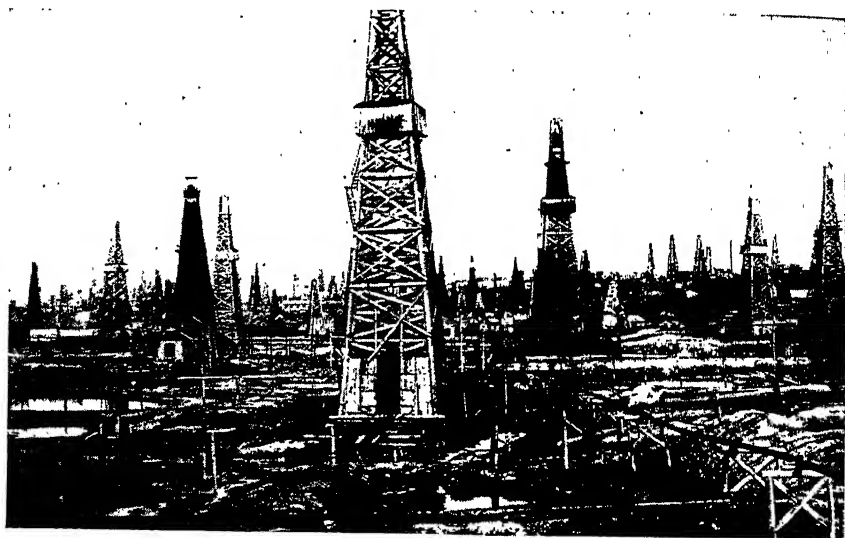
Cross section of southern Russian steppe land. (After S. Passarge.)

while the proportion devoted to grazing increases. Eventually cultivation disappears entirely, and the drier portions of the steppe are devoted wholly to the extensive grazing of cattle and sheep. In the cultivated sections the farmers tend to specialize in the growth of barley and sunflowers. Here also the Soviet government is introducing large-scale agriculture through the use of collective and state farms, these farms being almost entirely devoted to wheat.

The grazing lands gradually merge into the desert region which lies to the north of the Caspian. Portions of the desert are used for the most extensive types of grazing, but the existence of saline deposits on the surface renders other portions entirely bare of vegetation.

The only important mineral resource of the dry steppes or deserts is the petroleum which is found in the districts bordering the Caspian. Here three fields are sufficiently productive to enable Russia to occupy second place in oil production among the nations of the world. Recently the country has been producing approximately 10 per cent of the world's supply. The oldest and most important fields are those on the

Baku or Apsheronskii Peninsula on the shores of the Caspian. Pipe lines carry this oil to the Black Sea port of Batum, from which it is exported to all parts of western Europe. A second field occupies the Groznyi district on the northern slopes of the Caucasus. This, together with the Baku field, is responsible for 95 per cent of the Russian production. The Emba field occupies the Ural-Caspian Gap. It is of great potential importance but is only slightly developed at present. Russia is the only European nation with large petroleum reserves, and this, together with the fact that they are steadily accessible to the markets



A view of the Surakhany oil fields near Baku. (Courtesy of Sovfoto.)

of western Europe, gives the nation an economic asset of major importance.

Oil refining is the only industrial activity of any importance in the dry steppe or desert region. This lack of industrial development, combined with the extensive type of agriculture, causes the population to be very sparse and the cities few. Saratov and Stalingrad on the Volga are the only cities in the dry steppe region with a population of over 100,000. The former lies where rail and canal link the Volga and the Don, and consequently where an important break in transportation occurs. The canal connecting these two rivers is small, but is at present being deepened to accommodate larger boats. Astrakhan, on the delta of the Volga, is the only large city of the desert. It owes its importance both to its strategic commercial location and to the fact that it is the center of the caviar fisheries.

## MEDITERRANEAN RUSSIA

The southern slopes of the mountains of the Krim Peninsula, and the portion of the Black Sea coast bordered by the Caucasus, have the mild temperatures and summer drought so typical of the Mediterranean. Consequently a Mediterranean vegetation occurs, and such crops as winter wheat and corn are raised. This environment encouraged settlement by the Greeks during their period of maximum colonial and commercial expansion, and even today the Hellenic influence is strong throughout these shore lands. The natural beauty of the region is comparable to that of the French Riviera, and this, combined with its delightful climate, caused it to be the winter playground of the former Russian nobility. Its wooded slopes are dotted with magnificent marble palaces which formerly housed the leading aristocrats of Russia, but which are today used as rest homes and hospitals for the factory workers and the peasants.

## THE CAUCASUS

The Caucasus Mountains are a portion of the great Alpine Fold. They are young mountains, being high, rugged and very difficult to cross. No railroads cross the range at present, but plans are under way for the construction of a line which, through the use of a long tunnel, will connect Gori in Georgia with the northern slope. At present a highway leads over the Darial Pass to Tiflis, and a complete system of air lines connects the cities to the north and south. The mountains contain many isolated valleys where remnants of nearly every people who have ever crossed the area are to be found. Isolation has caused these peoples to preserve old customs, traditions and languages which have long since disappeared from more accessible sections. Little wonder the Caucasus are frequently called "a museum of peoples."

To the south of the Caucasus lies a low region composed of the valleys of the Rion and the Kura. Through these valleys passes a rail line connecting Baku with the Black Sea ports of Poti and Batum. Tiflis, the capital of the Transcaucasian Republic and the largest city of the region, is located where the north and south route over the Darial Pass connects with this east and west rail line. Agriculture of a Mediterranean type is carried on in the Rion Basin, but the broad and fertile Kura Valley has been largely useless, due to the light rainfall. However, extensive irrigation projects are at present under construc-

tion which should make this a highly productive region. Only one mineral of major importance occurs in the Caucasus or Transcaucasian



The Georgian military road through the Caucasus. (Courtesy of Sovfoto.)

area. The Chiaturi field in Georgia contains the world's greatest reserves of manganese. These deposits supply over half of the total

Russian production, and nearly all the Russian exports. They have been largely responsible for the fact that Russia produces nearly half of the world's supply of this mineral.

#### THE URALS

Unlike the Caucasus, the Ural Mountains are comparatively low, and offer little handicap to cross communication. A few peaks rise to an elevation of 8000 feet, but in general the mountains do not exceed 3000 feet. Their western slope is so gradual that it lacks any mountainous appearance, and the streams are navigable nearly to their headwaters. The eastern slopes are steeper, but even these offer no serious obstacle to transportation.

The mountains are, however, sufficiently high to form a climatic barrier separating the natural vegetation of Europe from that of Asia. A tundra type of vegetation extends from the Arctic far south along the crest of the Urals. The central portion of the mountains is almost entirely forested, and this resource is being increasingly exploited as transportation facilities improve. Toward the south the light rainfall causes all except the highest slopes to be grass covered and used only for grazing.

The Urals are also unlike the Caucasus in that they have considerable mineral wealth. These minerals are being exploited to an increasing degree, and are largely responsible for the rise of an important industrial area. Iron ore, copper, petroleum, coal, platinum, lead, chromium, salt and numerous other minerals are found in commercial quantities. Prior to the World War, only such highly valuable minerals as platinum were mined. The lack of adequate transportation facilities handicapped the exploitation of the others. This situation is being remedied, and the Urals are becoming one of the most important mineral-producing regions in Russia.

Sverdlovsk (Ekaterinburg) is the center of the chief mining and industrial section. Iron furnaces, steel mills, copper refineries, chemical plants, and factories producing various types of machines are springing up rapidly. Minerals continue to be important throughout the southern part of the mountains, and both Ufa and Orenburg are growing rapidly as industrial centers. With improved transportation facilities, the mineral production and industrial activity of the Urals should increase rapidly, and in the future they may well compete with the Moskva area and the Donets Basin for the industrial leadership of Russia.



## AGRICULTURE

Agriculture dominates the entire economic life of Russia. Formerly much of the land was turned over to the communal ownership of the "mir," or agricultural village settlement. Under this system, the scattered strips assigned to the individual peasant might be taken away from him and assigned to someone else at any time. Consequently he was interested only in immediate yields, and not in the future fertility



Hand agriculture is still common in many sections of Russia. (H. J. Smith.)

of the land. The high taxes which were imposed only emphasized this condition. Natural conservatism, combined with the lack of knowledge and capital, resulted in backward methods and the absence of machinery and fertilizers. As a result, the yield per acre was extremely low. The holdings of each family amounted to only a few acres, and these were constantly being reduced in size by the rapid increase in population. So small were the farms that many peasants were constantly on the verge of starvation, and an unfavorable season resulted in widespread suffering and death. Such was the picture of most of agricultural Russia prior to the World War, and such is the picture of much of it today.

Beginning in 1928, the government established numerous large

state farms, each specializing in some one commodity. These were designed to meet demonstration and experimental needs, as well as to supply certain essential commodities. By the spring of 1932, some 11 per cent of the total land sown was included in such farms.

The peasants were also encouraged to unite and form collective farms. For such farms the state furnished expert advisers, provided farm machinery, and established tractor stations. The collective farms expanded so rapidly that they included 69 per cent of the total area sown in the spring of 1932.

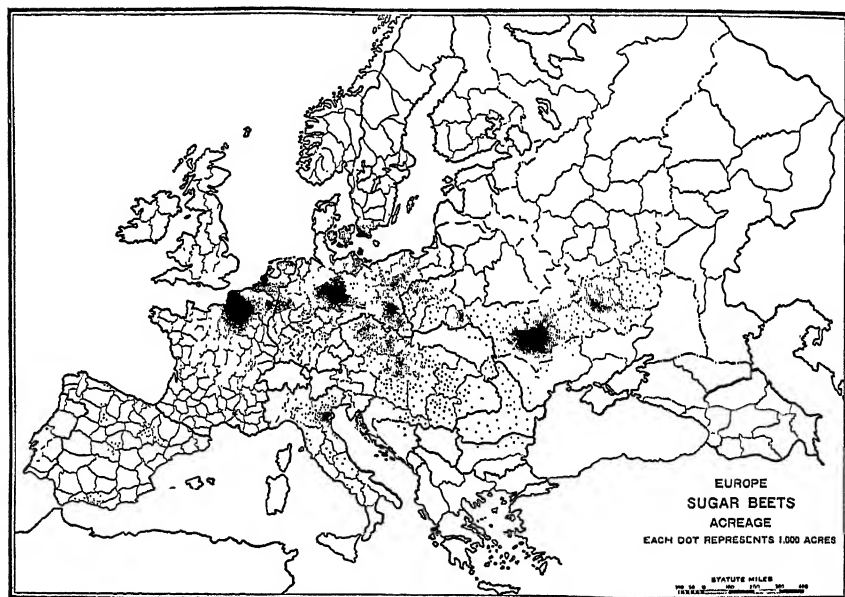
State and collective farms involve large-scale agriculture, and are better suited to conditions in the Black Earth region and the steppe than to those in the forest belts. They have tended to specialize in grains, industrial crops and livestock. In these phases they have been successful in that they have caused both the acreage and the production for the nation as a whole to rise above the 1913 figures, and have resulted in a higher production per acre than the individual holdings did. However, they have also given rise to at least one major problem. Under the old system, each peasant family produced its own food and tried to produce some surplus for sale. On the state and collective farms the peasants produce one or a few commodities and must secure a portion of their food from elsewhere. This has resulted in an increase in the production of grains and industrial crops, but a decrease in the production of vegetables and other crops upon which the peasants depend for food.

It may seem odd that the Russian people suffer because of small farm holdings and frequently a limited food supply when the density of population is so much less than that in most other European countries. Such conditions are the result of both physical and human forces. Cold, aridity and poor soil render wide areas unsuitable for cultivation. Irrigation, drainage and fertilization may reclaim a portion of them, but much will be forever useless. The lack of transportation also prevents much land from being used. However, improvements in transportation facilities may be expected eventually to render such areas usable; but, in spite of all the improvements that man can make in increasing the production on old lands or bringing new ones into use, it is doubtful whether there will be any material increase in the amount of agricultural products available for export. Instead, the rapidly increasing population and the rising standard of living may cause Russian exports to decline and eventually disappear, and it is not at all impossible that Russia may eventually become a food-importing nation.

TABLE 122  
YIELD PER ACRE OF REPRESENTATIVE CROPS  
AVERAGE, 1926-1930  
(U. S. Department of Agriculture)

Crop	Bushels per Acre		
	Russia	Germany	United States
Wheat.....	10.9	29.3	14.6
Rye.....	13.0	25.5	13.2
Oats.....	24.7	51.8	31.1
Barley.....	14.9	35.4	25.8
Potatoes.....	121.6	204.4	112.9
Sugar beets.....	5.6 <sup>a</sup>	11.4 <sup>a</sup>	10.9 <sup>a</sup>

<sup>a</sup> Unit, short ton.



For several years Russia has been the leading European country in the acreage devoted to sugar beets, but it was not until 1931 that it surpassed Germany in the production of sugar beets. (U. S. Department of Agriculture.)

**Crops.**—Its vast area and huge peasant population place Russia first among the European powers as a producer of agricultural products, despite the low production per acre. In fact, it is a close rival of the United States for leadership among the nations of the world in this respect. In 1930 European and Asiatic Russia combined led the world in the acreage and total yield of such important crops as wheat,

barley, potatoes, sugar beets and flax, while it led in acreage but ranked second in the total yield of rye and oats. Rye and potatoes are the most important food crops used domestically, although the consumption of wheat is steadily increasing. In normal years a considerable surplus of wheat and barley, and a smaller surplus of rye and oats, are available for export.

TABLE 123  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN RUSSIA<sup>a</sup>  
(U. S. Department of Commerce)

Crop	Acreage (millions of acres)			Yield (millions of bushels)		
	Average 1909-1913	Average 1926-1930	1930	Average 1909-1913	Average 1926-1930	1930
Wheat.....	74.0	74.8	80.5	757	810	989
Rye.....	61.9	66.8	69.1	743	867	930
Barley.....	26.2	18.1	17.8	418	291	311
Oats.....	41.3	42.7	42.4	925	1,048	1,145
Corn.....	3.2	8.7	8.6	52	125	105
Sunflower seed.....	...	8.1	8.5	...	4.4 <sup>b</sup>	3.5 <sup>b</sup>
Potatoes.....	7.2	13.7	13.5	741	1,688	1,734
Sugar beets.....	1.5	1.8	2.8	10,636 <sup>c</sup>	9,800 <sup>c</sup>	14,019 <sup>c</sup>
Tobacco.....	.2	.2	.3	230 <sup>b</sup>	340 <sup>b</sup>	285 <sup>b</sup>
Flax.....	3.1	4.7	5.4	740 <sup>b</sup>	792 <sup>b</sup>	904 <sup>b</sup>

<sup>a</sup> In this, as in all other tables, unless otherwise noted, statistics include the production of both European and Asiatic Russia. Unfortunately, they are not available for European Russia alone. It must be remembered, however, that the greater part of agricultural and industrial production takes place in the European portion of the nation.

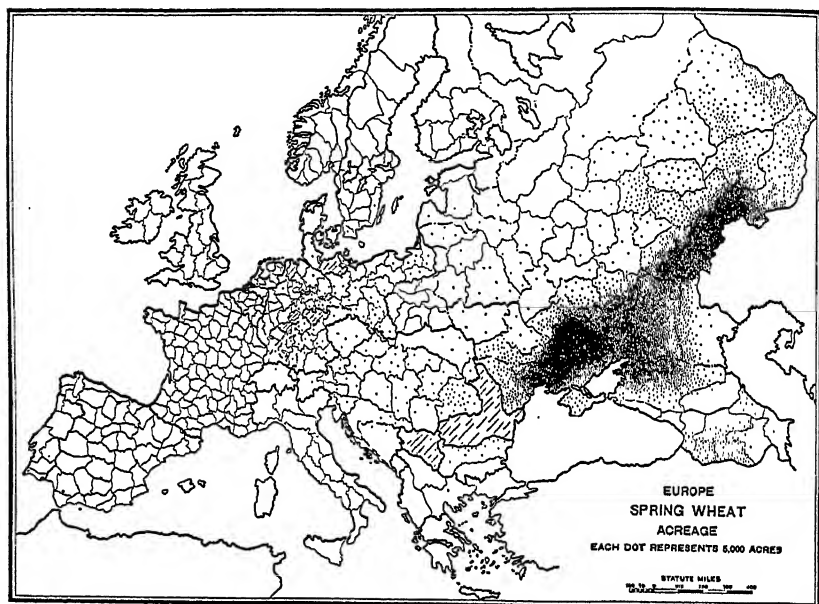
<sup>b</sup> Unit, millions of pounds.

<sup>c</sup> Unit, 1000 metric tons.

*Location of Crops.*—In general, cultivation becomes important only south of 60 degrees north latitude. Stretching westward from Moskva toward the Baltic is the center of flax production. From the Moskva district east toward the Urals the poor soils and short, cool summers lead to the maximum production of rye and oats. To the south of Moskva and in the central and western portions of the country lies the center of potato production. Still farther south in the Ukraine the more fertile soils and the denser population favor the growth of sugar beets. The fertile soils and dry harvest season of the belt from the Rumanian border northeastward to the southern end of the Urals cause it to be the principal spring wheat producing region. Barley also occupies a portion of the same region, especially the section just to the north of the Black Sea. The milder climate of the Krim

Peninsula and the region to the east of the Sea of Azov favors the growth of winter wheat.

While there is some diversification in all of these areas, one-crop agriculture dominates throughout almost all of Russia. The average peasant devotes a small patch near his house to the production of vegetables and other products for the direct use of himself and his family. The rest of his land is used for the production of one or at most two crops. The old three-field system of grain, green crops and fallow is still in wide use in Russia, although it was abandoned in



The distribution of spring wheat in Europe. (U. S. Department of Agriculture.)

most of western Europe two centuries ago. Due to the one- or two-crop system used, wide areas produce the same crop or crops, and the results are disastrous when weather or market conditions are unfavorable. Such a system obviously has also a detrimental effect on the soil.

**Livestock.**—Russia does not rank as high as a raiser of livestock as it does as a producer of crops; nevertheless, it ranks second among the nations of the world in the number of sheep and third in the number of cattle. Due to the lack of improved stock and to indifferent care, the yield of product or services per animal is much less than in western Europe. The present government is attempting to improve this condition by importing breeding animals and establishing up-to-date stock farms.

## NATURAL RESOURCES

**Forests.**—Russia has the greatest forest resources of any nation, as the forests within its present boundaries are more extensive than all those of North and Central America combined. However, most of this tremendous acreage lies in the Asiatic portion of the country. The forests of European Russia occupy 440,000,000 acres, or 38.7 per cent of the total land area, and are thus more extensive than those of all the other European nations combined. However, only some 367,000,000 acres are classified as productive, the balance being occupied by lakes, swamps and waste lands. Not all of these productive forests are of economic importance. Large areas are far removed from any present means of transportation, and are consequently unused. In other sections the trees are small or scattered, and of little commercial importance. Nevertheless, the remaining valuable and accessible forests are sufficiently large to enable the nation to cut more wood than any other European power, and to become one of the world's greatest timber exporters.

**Petroleum.**—The oil fields of southeastern Russia are the only important ones in Europe. They are being worked today far more intensively than ever before, and their output is sufficient to place Russia second among the nations of the world in this respect. It is probable that there are important reserves which have not as yet been discovered, and the production from the known deposits can be materially increased. In the future, Russia should supply an increasingly large proportion of the oil used by the great consuming centers of western Europe.

**Coal.**—The Union of Socialist Soviet Republics is estimated to contain approximately 7 per cent of the world's coal deposits. However, only 70,000,000,000 tons, or 16.4 per cent of these reserves, occur in European Russia. This places the nation third among the European powers in total reserves, but it ranks first in the reserves of anthracite. Within recent years coal production has risen rapidly, and by 1931 it reached approximately 57,600,000 tons, of which European Russia produced 49,700,000 tons. The increase has been more rapid in production than in domestic consumption; consequently, there has been a surplus for export. Exports rose to 1,828,000 tons in 1930, and found their chief market among the Mediterranean countries. The general adverse condition of the world coal market is the

only thing that is likely to prevent an expansion of exports in the future.

TABLE 124  
OUTPUT OF COAL IN RUSSIA<sup>1</sup>  
(millions of metric tons)

Field	1913	1930
Donets.....	25.3	35.8
Moskva.....	0.3	1.7
Ural.....	1.2	2.3
Kutnetz.....	0.8	4.6
Others.....	1.3	2.3
Total.....	28.9	46.7

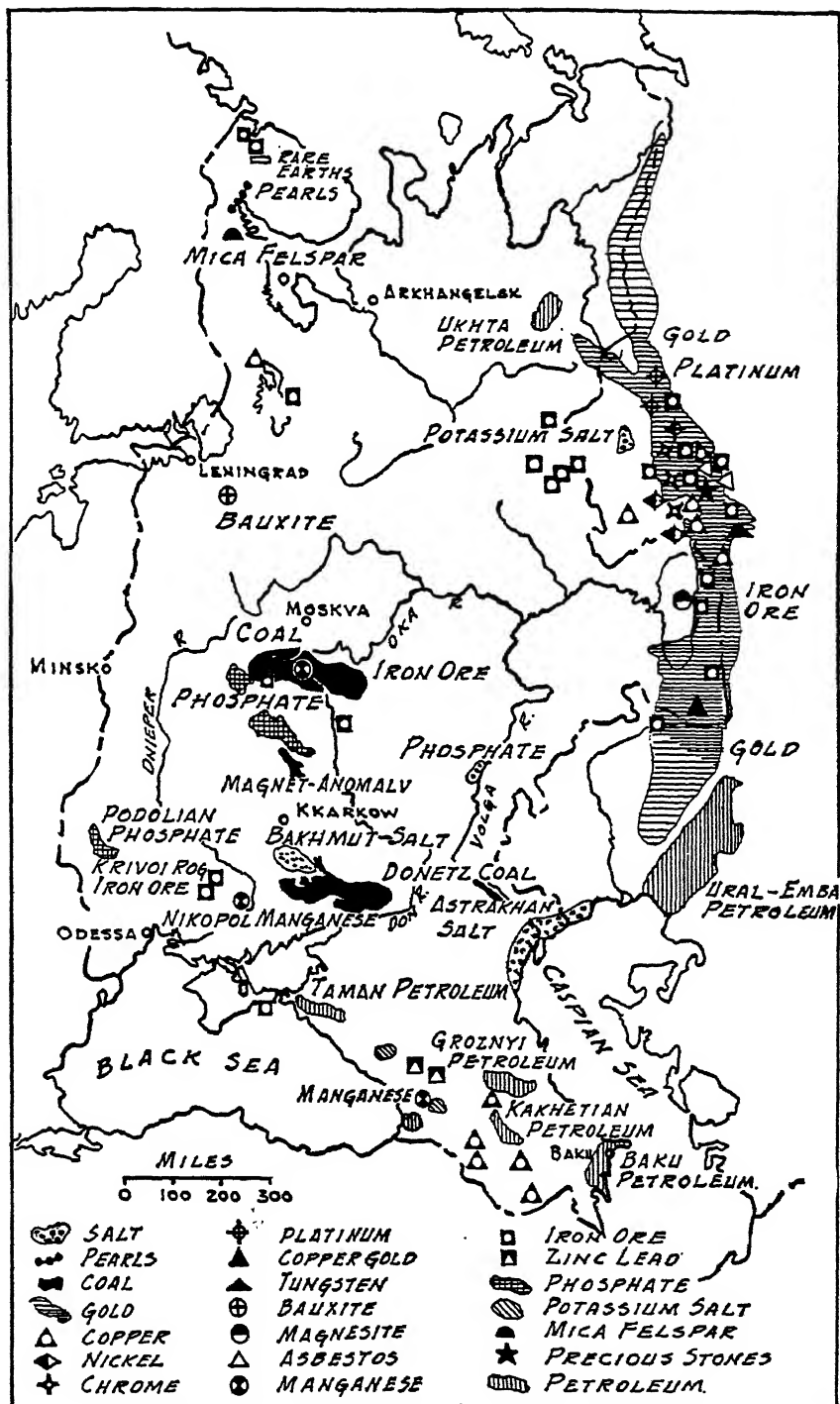
**Metals.**—It is doubtful whether Russia contains as much as 10 per cent of the iron ore of Europe. Fortunately, however, much of the ore that does exist is of good quality and is accessible to coal and markets. There are large deposits in central Russia to the south of Moskva, but those which are most used are in the south at Krivoi Rog and on the Kerch Peninsula. Here an active population, together with nearby coal and available transportation facilities, have caused the iron to be extensively mined. Large reserves also exist around the Urals. These have been little used in the past, but in the future they are to serve as the basis for an important iron and steel center.

Manganese, copper, gold, silver and platinum are also found in considerable quantities. Russia leads the world in both reserves and production of platinum and manganese. Manganese is found in the Caucasus and in the Ukraine, while the center for the production of the other metals is the Urals. Russia is thus better endowed with mineral raw materials than most other European nations, lead, zinc and tin being the only ones which have to be imported in any quantities. This nation has also exploited its resources to a less extent than any other section of Europe, with the possible exception of the Balkan Peninsula.

## MANUFACTURING

Despite the fact that since the days of Peter the Great the Russian government consistently attempted to develop manufacturing, little progress was made until near the end of the past century. At that time

<sup>1</sup> *Economic Handbook of the Soviet Union*, American-Russian Chamber of Commerce, New York, 1931.



The mineral resources of European Russia. (After S. G. Bron.)



Count Witte, realizing the need of greater economic diversification, encouraged the investment of foreign capital in railways and factories, and placed every agency of the government behind a program of industrialization. This program began to show results, and between 1895 and 1915 industry expanded irregularly but, in the aggregate, considerably. However, even with this increase the industrial output was insignificant, considering the population and natural resources of the country. In fact, at that time the value of the total industrial output of all Russia was less than the value of the present output of the city of Akron, Ohio.

Unfortunately, the war, and the chaotic condition following it, put an end to all progress, and in fact nearly destroyed what progress had been made. Thus it was not until 1927 that the value of industrial output reached the 1913 level. In 1928 the Soviet government put into force its famous "Five Year Plan," which had as one of its objectives a rapid increase in industrial activity.

While not all the objectives set under this plan were achieved, it did result in a rapid expansion of the basic industries, and at present attention is being given to increasing those industries which turn out consumers' goods. But even if the plans of the government are carried out, Russia will be far from being a highly industrialized nation, and will still be unable to supply all of its needs for manufactured goods.

TABLE 125  
MINE AND FACTORY PRODUCTION IN RUSSIA  
(U. S. Department of Commerce)

Product	1913	Average 1926-1930	1931
Coal, 1000 met. tons.....	29,053	36,040	57,600
Petroleum, 1000 barrels.....	67,865	90,506	169,754
Iron ore, 1000 met. tons.....	9,215	6,302	10,600
Manganese ore, 1000 met. tons.....	1,254	1,293	.....
Pig iron, 1000 met. tons.....	4,216	3,486	4,900
Steel, 1000 met. tons.....	4,246	4,189	5,400
Copper (smelter), met. tons.....	.....	25,986	48,000
Cement, 1000 barrels.....	.....	12,780	19,283
Acids, met. tons.....	309,000	348,328	626,200
Salt, 1000 met. tons.....	1,978	2,389	2,900
Wood pulp, met. tons.....	.....	184,075 <sup>a</sup>	.....
Paper and cardboard, 1000 pounds.....	610,013	833,250	.....
Cotton yarn, 1000 pounds.....	597,006	657,588	674,608
Wool yarn, 1000 pounds.....	101,412	103,616	.....
Linen yarn, 1000 pounds.....	117,505	154,372	.....

<sup>a</sup> 1926-1929.

The comparatively late survival of the feudal system and the backwardness of most of those in control of the government created unfavorable conditions for any industrial advance, while the low living standards of the people limited the market for industrial products. These conditions were accentuated by the survival of handicraft industries carried on by the peasants during the long winter season. The comparative isolation of Russia also operated as a retarding factor by limiting its contacts with the materials, ideas and methods of the more highly industrialized regions of the west, and the lack of adequate internal transportation acted in the same way. To these factors might be added the presence of a climate far from ideal for human health and energy.

Part of these retarding influences are no longer in force, and others operate with a decreasing effectiveness. Serfdom has passed, and the present government is bending every effort to promote industrial activity. Transportation facilities are being improved, and the influence of isolation is being reduced by education and propaganda designed to familiarize the Russian with industrial processes and products. Perhaps the greatest present handicap is the lack of trained workers and managers. The government has been successful in building and equipping a large number of factories, but in many cases production is below expectation, due to the lack of a trained personnel.

On the other hand, the nation has resources sufficient to make possible a considerable industrial advance. It also has a large home market, for even if the per capita buying power is low, the total buying power of 163,000,000 people is great. On the asset side must also be considered a government which, whatever one may think of its ideals, has been able to work the population up to a degree of enthusiasm and sustained effort heretofore unequalled in Russia. It would thus seem that industrial growth is likely to continue, possibly at an increased rate, but it also seems inevitable that, at least for an indefinite period, Russia will remain primarily an agricultural nation.

There are today three important industrial areas in Russia. The largest centers around Moskva, and is primarily concerned in manufacturing textiles and machinery. A second center is located on and around the Donets coal fields. Here good coking coal, combined with nearby iron ore and manganese, causes specialization in iron and steel and heavy metal products. A third and new center is developing around the mining district of the Urals. This district is occupied chiefly in the refining of metals and the manufacture of chemicals and ma-

chinery. Food and forest products are manufactured wherever the raw material is accessible to transportation.

### TRANSPORTATION

The vast size of Russia and the enormous distances involved make the development of transportation facilities of vital importance to the public welfare, but at the same time they complicate the task of providing such facilities. The nation has been slow to develop a modern transportation system, the one existing at present being entirely inadequate. As a consequence, communities are isolated, large areas of land are unused, and many resources cannot be exploited.

**Waterways.**—Before the development of the railways, the rivers and canals were the principal avenues of migration and trade. Fortunately, the Russian plain contains a number of large rivers which, because of relief, have gentle gradients. Some of the most important of these, including the Dvina, the Volga and the Dnepr, radiate from the low Valdai Hills. Thus they furnished the channels by which the Muskovite peoples expanded from this center to all portions of the plain. Once this expansion had taken place, these rivers formed the bands which united the various sections of the country and helped to establish national unity.

The river valleys soon became the chief centers of population. In the north the streams provided the only highways through the dense forests, while in the south the valleys were the only areas with sufficient moisture for the growing of wheat and rye. Consequently, today most of the larger cities are located on navigable waterways. The Volga is especially important in this connection, as eight cities, each with a population of over 100,000, as well as numerous smaller towns, line its banks. Most of these occupy the right bank. This is due partly to the fact that the river long served as the frontier between the Russians and the Tartars, and partly to the fact that the right bank is higher and the water is deeper on that side.

The commercial importance of the rivers is still great, although it has declined with the development of the railways. In European Russia the 16,000 miles of navigable rivers and the 1400 miles of canals in 1930 carried only 18.5 per cent of the freight moved by all agencies. Despite being numerous and having gentle gradients, the waterways are faced with certain serious handicaps. They are closed by ice from three to six months each year. Most of them have numerous meanders, so that the distance by water is frequently several times that by land.

In the dry season many of them are too low to be navigable. The Volga, whose length of 2300 miles makes it the greatest of Russian rivers, is also handicapped by flowing into the landlocked Caspian. This difficulty, however, will be partially eliminated by the completion of the canal connecting the Volga with the Don. Likewise, navigation on the Dnepr is hindered by the rapids below Dnepropetrovsk, but this difficulty will be eliminated by the completion of the water-power project at that point. Despite these handicaps, Russian waterways have been and will continue to be important carriers of commerce.

**Railways.**—In proportion to its size, Russia has a very low railway mileage. Many of the railways that do exist are poorly equipped and inefficiently operated. The rail net is most dense in the west and south, but even in these areas many of the people live more than ten miles from a railway. In the north and east rail lines are completely lacking over large sections. The present government recognizes the inadequacy of the present system, and the necessity of expansion if its program of industrialization is to be a success. Accordingly, it is building new track at the rate of some 600 miles a year, and is bringing in outside experts to improve the efficiency of the existing system.

**Airways.**—The lack of other transportation facilities and the long distances involved have favored the development of airways, for both commercial and military purposes. By 1930 there were regular air lines totaling some 16,000 miles in length, and during that year over 2,500,000 miles were flown commercially.

## FOREIGN TRADE

The relative isolation of Russia, its inadequate transportation facilities, its varied resources, and the low living standards of its population all combine to give the nation a low per capita foreign trade. In 1930 this trade amounted to less than \$7.00 per capita, which was considerably less than that of any other European power, and only about one-eighth that of the United States. In the same year its total foreign trade amounted to only about two-thirds of that of little Belgium.

As would be expected in a country of this type, foods and raw materials make up over 90 per cent of all exports. Within recent years food exports have declined, and raw material exports have increased in importance. Thus in 1930 foods made up 34.2 per cent of all exports, while raw materials and semi-manufactured goods made up 56.1 per cent. The more important single items were petroleum prod-

ucts, wood, wheat, and furs and skins. Germany and the United Kingdom are normally the leading markets, with Persia, Italy and Latvia following in the order named.

Over one-half of all imports are manufactured products, while slightly more than one-third are raw materials and semi-manufactured goods. Machinery, iron and steel, and raw textile fibers are the leading items. Normally Germany, the United Kingdom and the United States are the principal sources of imports.

Within the past few years the country has had a slight excess of imports over exports. However, the total foreign trade is so small that this deficit is not important.

There seems to be little probability of any increase in trade in the near future. In fact, the tendency seems to be in the opposite direction, for the present government is fostering a program which will make the country more and more independent economically. Russia is the only European country with sufficient size and resources to make any great degree of economic independence possible.

#### BIBLIOGRAPHY

- Baker, H. D., "The Industrialization of Russia," *Current History*, 1931, vol. 33, pp. 481-492.
- Berg, L. S., *Geographical Zones of the U. S. S. R.*, Part I, *Introduction, Tundra, the Forest Zone*, Izdanié Institouta Rastenievodstva, Leningrad, 1930.
- Budish, J. M., *Soviet Foreign Trade—Menace or Promise*, Horace Liveright, Inc., New York, 1931.
- Chamberlin, W. H., *The Soviet Planned Economic Order*, World Peace Foundation, Boston, 1931.
- Chase, S., et al., *Soviet Russia in the Second Decade; A Survey by the Technical Staff of the First American Trade Delegation*, The John Day Company, New York, 1928.
- d'Almeida, P. C., "États de la Baltique—Russie," *Géographie Universelle*, Librairie Armand Colin, Paris, 1932, Tome 5.
- Earle, F. M., "Mechanization of Agriculture in U. S. S. R.," *Economic Geography*, 1931, vol. 7, pp. 297-308.
- Economic Handbook of the Soviet Union*, American-Russian Chamber of Commerce, New York, 1931.
- Economic Review of the Soviet Union*, Amtorg Trading Corporation, New York, semi-monthly until 1933.
- Hoover, C. B., *The Economic Life of Soviet Russia*, The Macmillan Company, New York, 1931.
- Hopkins, I. M., "Sovietizing Agriculture," *Journal of Geography*, 1931, vol. 30, pp. 279-290.

- Novakovski, S., "Natural Resources of Ukraine," *Journal of Geography*, 1924, vol. 23, pp. 293-300.
- Reynolds, J. H., "Nationalities in the U. S. S. R.," *The Geographical Journal*, 1929, vol. 73, pp. 370-375.
- Segal, A. A., and Santolov, L., *Soviet Union Yearbook*, Allen and Unwin, Ltd., London, 1930.
- Semenov-Tian-Shansky, B., "Russia: Territory and Population," *Geographical Review*, 1928, vol. 18, pp. 616-640.
- Tulaikov, N. M., "Agriculture in the Dry Regions of the U. S. S. R.," *Economic Geography*, 1930, vol. 6, pp. 54-80.
- Visher, S. S., "Russian Industrialization," *Journal of Geography*, 1932, vol. 31, pp. 68-78.
- von Eckardt, H., *Russia*, translated by Catherine Alison, Alfred A. Knopf, New York, 1932.
- Weill, A. S., and Hughes, W. E., "Present Conditions in Russia," *Bulletin of the Geographical Society of Philadelphia*, 1930, vol. 28, pp. 151-160.

## RUMANIA (ROMÂNIA)

THE broad, fertile plains of Rumania remind one of the more productive portions of Iowa and Kansas, but the wealth of the nation is not confined to its soil. Clothing its central mountains are valuable forests, while underground occur important deposits of petroleum, salt, iron, coal, and numerous other minerals. Truly it would seem that nature had provided everything essential for the development of one of the most prosperous agricultural and industrial nations of Europe.

Unfortunately, the people of Rumania have made very ineffective use of these blessings. A backward peasantry, using primitive methods, harvests only a fraction of what the soil is able to produce. Little interest is taken in industry and trade, and most of the resources are exploited by foreigners. Rumania has thus not attained the economic position to which its natural advantages would seem to destine it. It remains a land of the future rather than of the present.

## HISTORY

Most of the history of Rumania is a record of domination by outside peoples. First the Turk and then the Russian ruled, and, although their control was frequently more nominal than real, the nation did not achieve complete independence until 1878. Its freedom at that time was largely the result of the efforts of the western European powers to prevent Russian expansion toward the Danube and the Balkans.

The nation as thus established included Walachia, Moldavia and northern Dobrogea. No expansion of territories occurred until Rumania joined the coalition in the Second Balkan War, as the result of which it annexed the southern Dobrogea, with its Bulgarian population.

As the result of its part in the World War, Rumania profited by numerous additions to its territory. From Hungary it received Transylvania, with bordering portions of the Hungarian plain, and a large part of Banat. The nation also profited by the acquisition of the Aus-

trian crown province of Bucovina, with its mixed population of Ruthenians, Rumanians and Germans. The disorganization accompanying the Russian Revolution provided Rumania with the opportunity of recovering the province of Bessarabia, which it had been compelled to surrender in 1878 as a partial price for its independence. These additions more than doubled the area and population of the nation, but created serious political problems through the inclusion of large minorities.

# POPULATION

The Rumanians, or Walachs, claim to be descendants of the Roman settlers in the frontier province of Dacia. During the second century the Romans conquered this province and, under the protection of frontier posts, established agricultural communities. However, Roman rule lasted only for 150 years, after which Goth, Tartar, Slav, Turk and Magyar swept across the fertile plains of Rumania. During these invasions the inhabitants of the plains retreated to the highlands, and thereby preserved not only themselves but also their language and traditions. Some of these conquerors ruled for a time and then withdrew, while others settled on the land and in most instances were absorbed by the Rumanians. Accordingly, the present population of the country is of mixed race, with Slavic blood especially important among the peasants. They have a distinct language, the Ruman, which is based on low Latin, and which is the only reminder of their Roman origin.

The educational and economic standards of the present population are low. Few of the peasants can read or write, and many of them are indolent. Agricultural methods are primitive, and the average Rumanian takes no interest in commerce or industry. These activities

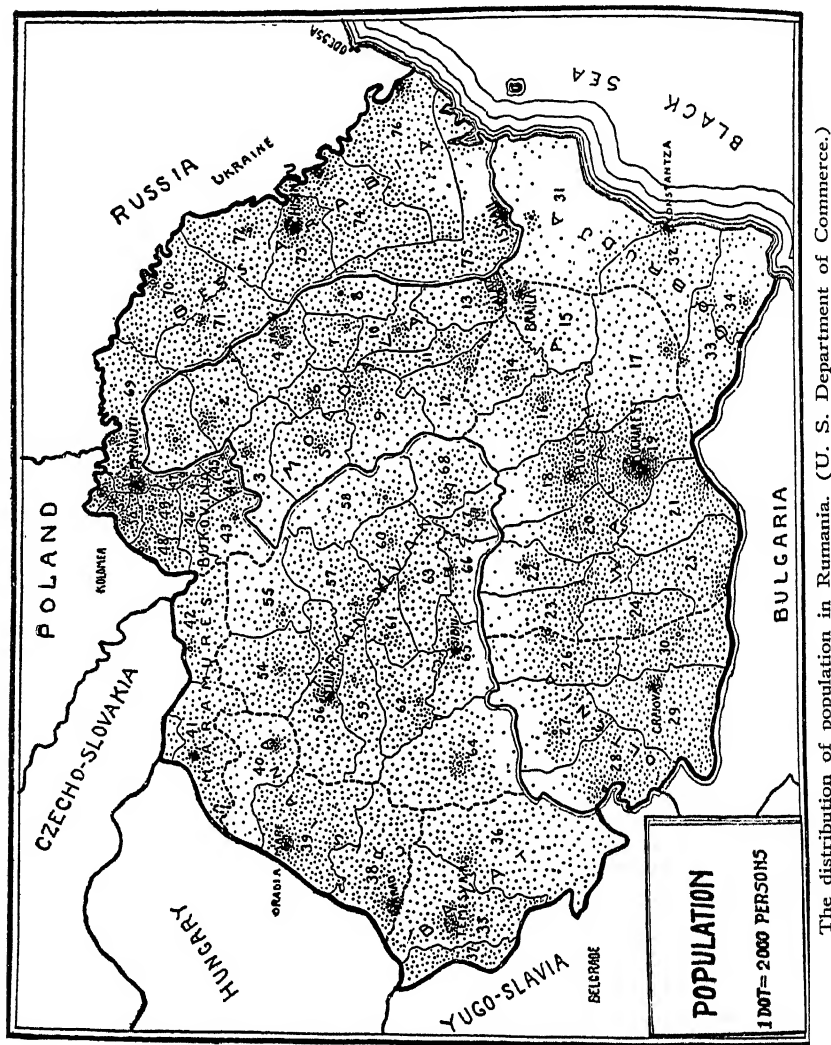
TABLE 126  
OCCUPATIONS OF THE WORKING POPULATION OF RUMANIA  
(U. S. Department of Commerce)

Occupation	Percentage of Total
Agriculture and forestry . . . . .	79.5
Mining . . . . .	.2
Manufacturing . . . . .	7.8
Commerce and transportation . . . . .	4.5
Professions . . . . .	1.3
All others . . . . .	6.7
Total . . . . .	100.0



are almost entirely under the control of foreigners. These low standards tend to keep production down, despite the numerous economic advantages which the country possesses.

**Minorities.**—The expansion of the nation following the World War resulted in the inclusion of numerous minority groups. Transyl-



vania and Banat contain some 1,500,000 Magyars, and there are some 400,000 Germans in Transylvania and Bucovina. The cultural and economic standards of both the Magyars and the Germans are considerably above those of the Rumanians. This fact, together with dif-

ferences in race and religion, causes serious friction between these minorities and the dominant group. In Bucovina and Bessarabia are some 1,200,000 Ruthenians. These people have lower standards than the Rumanians. The Bulgarians in southern Dobrogea and Walachia, and the scattered Jewish population are other important minority groups. These minorities keep alive political unrest and prevent the establishment of friendly relations with Rumania's neighbors.

**Distribution of Population.**—The population of Rumania was estimated at some 18,300,000 in 1930. This gives a density, for the country as a whole, of 161 per square mile, which is low as compared with some of the western European nations but high for a country which is primarily agricultural. In fact, it contains more than three times as many people per square mile as such prosperous agricultural states as Iowa or Nebraska.

As approximately 80 per cent of the population is engaged in agriculture, one would expect to find the population density varying in accordance with the productivity of the soil, but historical forces have intervened to modify somewhat this normal distribution. The frequent use of the highlands as a place of refuge has given them a greater density than might be expected in such rugged areas. Thus Transylvania has a population density which compares favorably with most sections of the plain, while Bucovina has some 300 persons per square mile, making it one of the most densely settled portions of the country. The fertile soils of Banat have caused that province to be densely settled. In Walachia and Moldavia, the existence of important deposits of oil and salt, as well as fertile agricultural lands, causes the greatest density to occur in the Carpathian foothills.

As the great majority of Rumanians are engaged in agriculture, it is not surprising that nearly 80 per cent of the population is classified as rural; but recently the population of the cities has been increasing with greater relative speed than that of the rural districts. Today the nation has eight cities with a population of over 100,000, but București (Bucharest), the capital, is the only one with a population of over 500,000.

## SIZE

Rumania now has an area of 113,887 square miles, or approximately the same as that of the State of Arizona. It thus ranks tenth in size among the European powers. Its relatively large area, combined

with its fertile soil and abundant resources, should permit the support of a large and prosperous population.

### SITUATION

The location of Rumania is very favorable from a commercial point of view. It contains the Danube delta and a section of the Black Sea coast. Here is located its principal seaport, Constanța. Although up-stream navigation is difficult through the Iron Gate, the Danube serves as a commercial link with Yugoslavia, Hungary, Austria and central Europe. To the east the Dnestr provides water contacts with Russia and Poland. Rail lines also unite the nation with its neighbors and with western Europe. The grains and industrial raw materials of Rumania consequently have ready access to the markets of northwestern Europe, and by the same routes the nation can secure such manufactured goods as it needs.

The political situation of the country, however, is less favorable. To the east lies Russia with its expanding population, a nation which may be a future menace to Rumania due to its tremendous size and the hostility engendered by the seizure of Bessarabia. To the south and the southwest lie the Balkans, whose proverbial instability makes them uncomfortable neighbors. Hungary to the west broods over her lost territories, and only awaits a favorable opportunity to recover them. Difficulties thus confront the nation on all sides, and have complicated both its international and its domestic problems.

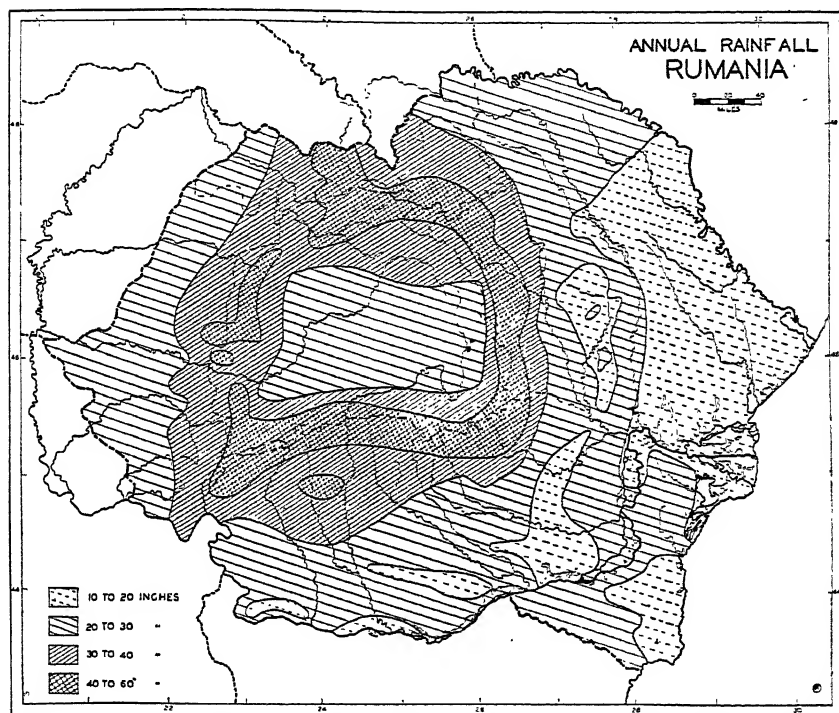
### CLIMATE

Rumania has a continental climate with extreme temperatures varying from 120 degrees Fahrenheit to —30 degrees Fahrenheit, but the average range for the country as a whole is only about 50 degrees Fahrenheit. The autumns and springs are very short, the change from winter to summer taking place rapidly. Although the winters are less severe than in Russia, they are sufficiently cold so that the rivers are blocked by ice for an average of three months each year. Rainfall is light, and the maximum occurs during the early summer months. Southern Bessarabia and the Dobrogea have the lightest rainfall, while the heaviest occurs on the slopes of the Carpathians. The average for the country as a whole is about 25 inches. Unfortunately, there are wide variations in rainfall from year to year, thus making crop yields uncertain.

# GEOGRAPHICAL REGIONS

## THE RUMANIAN HIGHLANDS

Rumania consists of a central core of mountains surrounded on nearly all sides by plains or low plateaus. The Carpathians extend



Average annual rainfall in Rumania. (By M. C. Roberts, from *Economic Geography*, vol. 9, p. 232.)

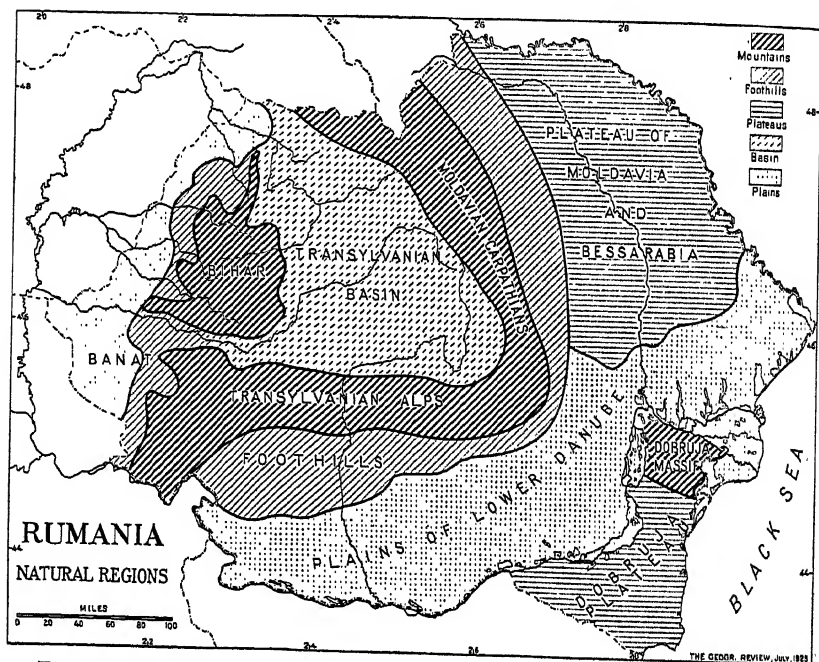
south to the central part of the country, and are continued to the west in the Transylvanian Alps, which cross the Danube at the Iron Gate. These mountains are a portion of the Alpine Fold, and their rounded summits attain an elevation of from 6000 to 8000 feet. Extensive forests of conifers occupy the upper slopes, and their lower portions support large forests of beech and oak. Interspersed with these forests are areas of meadows and cultivated fields. Little agricultural villages dot the valleys, and the dense population is responsible for the cultivation of every acre of productive land. Wheat, barley and oats are raised in the more level sections, while the lower slopes support orchards and

vineyards. In summer the excellent pasturage on the upper slopes attracts herders from the plains, and transhumance is important in the economic life of the region.

TABLE 127  
USE OF LAND IN RUMANIA, 1930<sup>1</sup>

Use	Percentage of Total
Arable land.....	43.6
Permanent grass or pasture.....	13.7
Forests.....	24.5
Other.....	18.2
Total.....	100.0

Through these mountains the rivers have cut deep and picturesque cañons. The two railways which connect Walachia with the Transyl-



The natural regions of Rumania. (From "The New Rumanian State," by E. M. Sanders; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

vanian Basin make use of these gaps, but despite these avenues of cross communication, the mountains form a serious barrier to transportation between Transylvania and the old kingdom.

<sup>1</sup>International Yearbook of Agricultural Statistics, 1930-31.

**The Transylvanian Plateau.**—The old Hungarian district of Transylvania forms a high plateau, roughly circular in shape, and with an average elevation of from 1000 to 1600 feet. The Carpathians, Transylvanian Alps and Bihor Mountains surround it on all sides except the west. The plateau floor is far from level, being broken by mountain peaks and cañons, and interspersed with fertile valleys and plains. The mountain wall restricts contacts with the older portions of the kingdom, while the valleys of Mureșul and the Someșul provide easy contacts with the Hungarian plain. It is accordingly not surprising that the Hungarians early conquered the area, and that today it contains a large Hungarian population.

Some 40 per cent of the plateau is forested, and lumbering is an important activity. The valleys of the larger rivers are lined with rich farm lands, and 27 per cent of the area is under cultivation. The better lands are owned and farmed by the Hungarians, while the backward Rumanian peasants cultivate the slopes or the smaller valleys. The rugged relief, however, renders much of the land unsuitable for the plow but excellent for pasturage. Large herds of cattle and horses are grazed, and a considerable number of Rumanian peasants are engaged entirely in pastoral activities.

The plateau is rich in natural resources, and, under the direction of the Hungarians and Germans, these were used as the bases for numerous industries. Abundant timber and available water power have led to the development of sawmills and pulp mills. Considerable supplies of coal and natural gas, together with such metals as iron, copper, gold, lead and silver, have made this the center of the metallurgical and chemical industries of the nation. In fact, prior to the World War, lumbering, mining and manufacturing were the leading occupations, while agriculture occupied a subordinate position.

**Bucovina.**—Bucovina ("Beech Land") lies to the north between the old kingdom and Galicja. It is occupied partly by mountains which are offshoots of the Carpathians, and partly by the valleys of the Pruth, the Siret and the Dnestr. Forests occupy nearly one-half of the total area, and are found chiefly in the western mountainous section. Rich farm lands are to be found in the eastern river valley, and about 30 per cent of the total area is cultivated. The population of Bucovina is very dense and extremely backward. Ruthenian peasants form the largest element. They either raise rye and oats by primitive methods or work in the lumber camps. The Rumanians are less numerous but more advanced, and for the most part live in small agricultural villages in the fertile valleys.

## THE PLAINS OF RUMANIA

**Bessarabia.**—Bessarabia is separated physically from the rest of the country by the Pruth, and has distinctive ethnic and cultural characteristics. This province is an extension of the Black Earth region of the Ukraine, and contains the rich loess soil so typical of that section. In the north it is a land of hills and broad plateaus, while to the south rolling plains extend to the lagoons bordering the Black Sea. Rich soil and level relief combine to make this region well suited for agriculture, and are responsible for the fact that nearly 70 per cent of its area is under cultivation. However, the region is not always prosperous. A low and varying rainfall results in frequent droughts which cause much suffering among the peasants. In the north the rainfall averages slightly more than 24 inches each year, but in the south the average falls to less than 11 inches. Rainfall thus offers the only physical limitation to the agricultural development of this section.

With the exception of its soil, Bessarabia has few natural resources. Less than 6 per cent of its area is forested, and lumbering is of little importance. Mineral resources are almost entirely lacking. This lack of resources, together with the backward population, has retarded any growth of manufacturing, and has been responsible for the fact that nearly the entire population is engaged in agriculture.

**The Dobrogea.**—The hilly steppes of the Dobrogea lie between the Danube and the Black Sea. Throughout most of its area the rainfall is light, and crops are handicapped by lack of moisture. Lagoons and marshes line the coasts, and to the north the delta of the Danube is so low that cultivation is impossible. Wheat is raised in the moister areas, and the drier portions are devoted to grazing. Bulgarians constitute the great majority of the population in the south, and considerable numbers of these people are to be found in the other portions of the province. Being agricultural, the population is primarily rural, and Constanța is the only important city. This is the principal seaport of Rumania, and is located where an outcrop of hard rock makes possible the development of a considerable community. Its moderate-sized harbor has a depth of 24 feet, and has the advantage of being seldom obstructed by ice. A railway and a pipe line connect the port with the interior of the country, but it has the disadvantage of being located a considerable distance from the principal agricultural and oil-producing regions. The port is chiefly concerned with the export of oil,

but through the construction of large elevators the government hopes to increase its shipments of grain.

**Moldavia and Walachia.**—Sloping from the Carpathians to the Pruth and from the Transylvanian Alps to the Danube is a region of foothills, plateaus and plains which formed the major portion of the old kingdom. It is really a westward extension of the Russian Black Earth district, being a level or rolling steppe region whose rich loessial soils and continental climate make it one of the important cereal-producing sections of Europe. Its economic importance is increased by valuable deposits of petroleum and salt in the foothills, and by the



Balcic, a small port on the Black Sea. Note in the background the hilly steppe country of the Dobrogea. (Courtesy of the Rumanian Legation, Washington, D. C.)

timber of the mountain slopes. Politically, it formed the natural avenue of Russian advance toward the Danube and the Balkans. It thus occupied the position of a buffer state, and the recognition of Rumanian independence by the Treaty of Paris (1856) was the result of a desire on the part of the western European powers to prevent Russian expansion toward the west. Protected in the rear by its mountain wall and on its flanks by the swamp-girt Danube and Pruth, it was well equipped to perform its buffer function.

**The Foothills.**—A region of foothills, which is in reality a wide plateau, slopes south from the Transylvanian Alps and east from the Carpathians. Here rich agricultural valleys and valuable deposits of salt and petroleum lead to a denser population than is to be found in



the plains. Formerly large estates occupied the valley floors and produced considerable quantities of wheat, corn and fruit. Today many of the valley estates have been divided among the peasants, who devote most of their level lands to the production of grains. Although some of the slopes are still cultivated, others are planted in orchards and vineyards. This has been carried to such an extent that the foothills are frequently referred to as "the district of vines." The higher and



Scene in the Walachian foothills. (Courtesy of the Rumanian Legation, Washington, D. C.)

more rugged portions of the hills are either used for grazing or remain forested.

This region is estimated to contain 370,000 acres of oil-bearing lands, of which only 8120 acres have been exploited. The most important producing region is around Ploesti, to the north of București. Other deposits occur to the east near Buzau, and in the Moldavian foothills. Refineries are located near the principal producing fields, and are connected by pipe lines with Constanța on the Black Sea and Giurgiu on the Danube. Most of the exploitation is carried on by foreign companies. At present, Rumania ranks second among the European states as an oil producer.

The foothills also contain numerous high-grade deposits of salt,

and it is estimated that Rumania is the richest country in Europe in this mineral. Over 700,000,000 pounds are produced annually.

**The Walachian Plain.**—Between the Danube and the foothills of the Transylvanian Alps stretches the broad, level, treeless plain of Walachia. Large sections are covered with rich loessial and alluvial soils, and these formed the principal cereal surplus sections of the old kingdom. Interspersed with the fertile districts are wide areas where soils of coarse sand and gravel cause the land to be barren.

Population throughout the plain is sparse, and is largely concentrated in the river valleys. This is due both to the fertility of the valley soils and to the scarcity of water. The light and variable rainfall and the porous soils result in frequent drought and handicap agriculture. The result of this can be seen from the fact that the little agricultural villages, with their surrounding cultivated fields, are concentrated either around springs or along the banks of the larger streams. Unfortunately, the Danube is bordered on the north and east by wide areas of lagoon and marsh. Unless drained, this land is useless for agriculture, and most of the towns and cities are forced to locate a considerable distance back from the river.

Almost the entire population of the plain is engaged in agriculture. Near the villages the peasants laboriously till their fields of corn and wheat, while on the lands less suited for cultivation they raise considerable numbers of cattle, horses and swine.

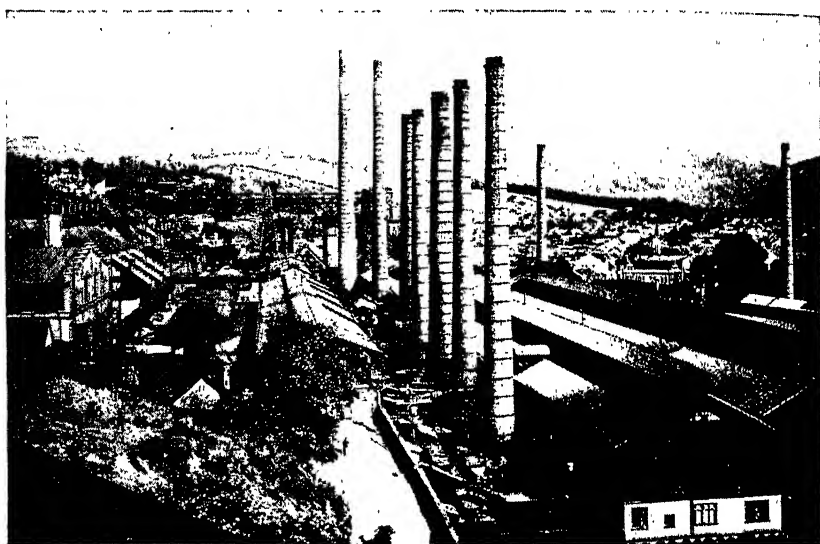
TABLE 128  
COMPARISON OF YIELD PER ACRE IN RUMANIA AND IOWA  
(U. S. Department of Agriculture)

Crop	Yield per Acre (bushels), 1927-1930	
	Rumania	Iowa
Wheat.....	14.9	19.7
Barley.....	19.1	30.0
Oats.....	26.8	34.9
Corn.....	15.1	38.0

In the heart of the Walachian plain lies București, the nation's capital and largest city. Its importance is largely due to its situation in the midst of the country's leading agricultural region, and to the fact that it is the principal railway center of the country. It is the chief grain market of Rumania, and many of its people are engaged in flour

milling, sugar refining, slaughtering and meat packing, and the manufacture of other agricultural products. The French influence in the Capital is shown by its obvious but rather unsuccessful attempt to imitate Paris, both in appearance and in life.

Along the edge of the plain are Rumania's two principal river ports. Brăila, a city of about 90,000, is located about 100 miles from the mouth of the Danube, and is the principal export port of the nation. It has the double advantage of being located at the head of deep-water navigation and of having good rail connections with the leading agricultural districts. Most of the nation's exports of grain pass out through



Steel works in Banat. (Courtesy of the Rumanian Legation, Washington, D. C.)

the port. A little farther down the river is located the city of Galați (Galatz), the leading port of importation. Both of these ports handle a considerably larger tonnage each year than the seaport of Constanța.

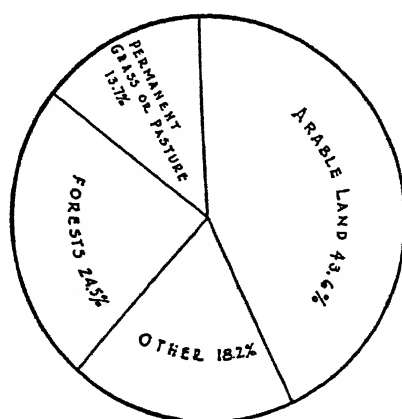
**The Moldavian Plain.**—Southern Moldavia resembles the Walachian plain both in physical features and in human development. Like the latter, it is a flat, loess-covered plain devoted entirely to agriculture. The broad valleys and marsh-bordered banks of the Siret and Pruth present conditions similar to those along the Danube. However, northern Moldavia, especially that portion lying between the Siret and the Pruth Rivers, is a region of low plateaus and gently sloping river valleys. Here agriculture is still dominant; but in its greater attention to fruit and livestock, and in its close association with for-

estry, it resembles conditions in the Carpathian foothills more than those in the plain.

**Banat.**—The rich farming country of Banat includes a portion of the Hungarian plain. Levelness, rich soil, and a continental climate create conditions ideal for cereal production. Its mixed population of Magyars, Germans, Serbs and Rumanians is much more advanced culturally and economically than the Rumanians as a whole. Consequently, they make good use of their favorable environment, and their crop yields per acre are considerably higher than throughout the rest of the country. Banat is cut off from the rest of the country by the Transylvanian Alps and the Bihor Mountains, and historically and culturally it is linked more closely with Hungary than with Rumania. Its inclusion in the enlarged state creates a serious minority problem, and is likely to keep alive constant bitterness on the part of Hungary.

#### AGRICULTURE

In few areas throughout the world has nature created conditions more favorable for agriculture. Level plains and rolling foothills are



The uses of land in Rumania. Percentages of total area. (*International Yearbook of Agricultural Statistics, 1930-31.*)

covered with soils of unusual fertility, and numerous rivers provide natural arteries of commerce. Climate is the sole physical factor which offers any serious handicap to the farmer. It is a region of extremes, both in temperature and in rainfall, and it is the small amount and uncertainty of the rainfall which creates the most serious problem. Both droughts and floods are common, and little effort is made toward moisture conservation.

As a result of this favorable environment, 43.6 per cent of the total area of the country is under cultivation, and another 13.7 per cent is in permanent meadow and pasture. The climatic conditions favor specialization in grain crops, so that it is not surprising to find that 85.8 per cent of the arable land is planted in cereals. Corn and wheat are the principal crops. The former constitutes the principal grain consumed throughout the country, and is steadily increasing in importance. It has long been the leading crop of the small peasant farmer, and is especially important in Moldavia, which produces approximately one-fourth of the nation's total. Wheat was formerly the principal grain raised on the large estates, but with the break-up of those estates it is declining in acreage. Barley and oats have increased in importance in recent years, a change which reflects the increasing interest in livestock raising. Sugar beets are raised in Moldavia, while potatoes are especially important in Bukovina and Transylvania. Rumania ranks fourth among the European powers in the yield of its vineyards, which are located in Transylvania, northern Moldavia, Bessarabia and northwestern Banat.

TABLE 129  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN RUMANIA  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as noted)	
	1909-1913 <sup>a</sup>	1926-1930	1909-1913 <sup>a</sup>	1926-1930
Wheat.....	9,515	7,625	158,672	110,749
Barley.....	3,378	4,494	61,677	87,798
Oats.....	2,119	2,757	59,776	75,882
Corn.....	9,644	10,841	193,209	184,495
Potatoes.....	343	484	41,868	72,356
Sugar beets.....	32	148 <sup>b</sup>	271 <sup>c</sup>	977 <sup>bc</sup>
Grapevines.....	216	669	165,227 <sup>d</sup>	173,409 <sup>d</sup>

<sup>a</sup> Present boundaries.

<sup>b</sup> 1927-1930.

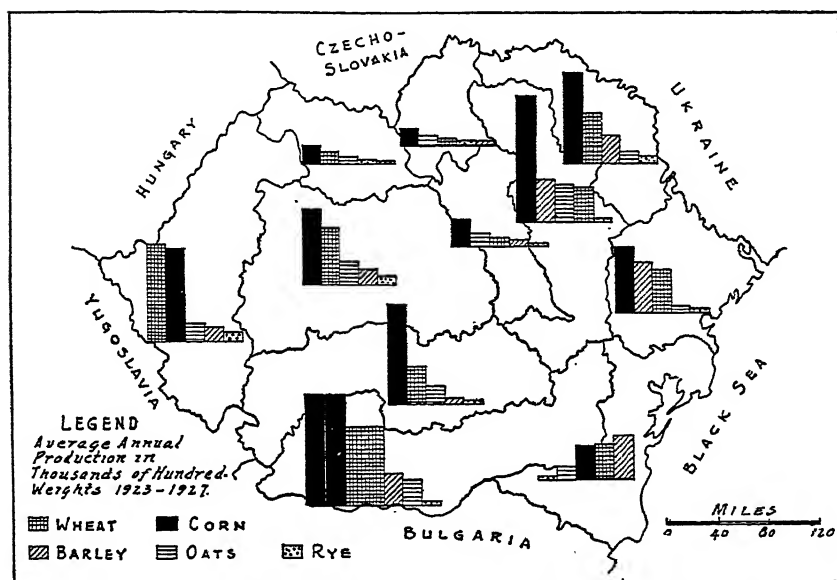
<sup>c</sup> Unit, metric ton.

<sup>d</sup> Unit, gallon of wine.

In the past the raising of animals has not received any great attention, and has been chiefly carried on by the small peasant farmers. Most of those raised were used for domestic consumption, and little attention was given to exports. The highland areas support large flocks of sheep, which are raised primarily for milk, and only secondarily

for meat or wool. Cattle are raised in the foothills and plains, and are frequently driven to summer pasturage in the mountains. Together with buffaloes, they are raised chiefly for work rather than for meat or milk.

**Agricultural Problems.**—As in most portions of eastern Europe, agrarian reform has long been a problem of first importance. Since the abolition of serfdom in 1864, numerous efforts have been made to break up the large estates and divide the land among the peasants. These reforms were inadequate, and as late as 1918 approximately



The production of cereals in Rumania. (Courtesy of the *Journal of Geography*.)

one-half of the farm land was still in large holdings. Since the war comprehensive laws have been passed, and if they are properly administered they should do much toward remedying the situation. However, the break-up of the large estates has in itself brought some serious problems. Formerly these estates made use of machinery and advanced agricultural methods which were in sharp contrast to the backward practices of the peasants. The division of these estates put an end to these advanced methods, and has resulted in a decline in the yield of some crops. Many peasants are still landless, and the holdings of others are too small. It must be remembered, however, that the nation has a relatively dense and rapidly growing population, and if all the peasants are given land the holdings will soon be too small to be farmed profitably. Therefore, the growth of manufacturing, with

a consequent movement of a portion of the population from the land to the urban centers, would seem to be necessary if efficiency in land utilization is to be achieved.

Despite the fact that the physical environment of Rumania favors agriculture, the farming population consists largely of illiterate and poverty-stricken peasants. This condition becomes more serious when it is realized that some 80 per cent of the total population of the nation depends upon the soil for a living. The unequal distribution of land is in part responsible for the poverty of the peasant group. Much of it, however, is due to their own indolence and inefficiency. The most primitive of agricultural methods are used. Machinery is lacking and tools are crude, with the result that proper cultivation is impossible. As a consequence, the yield per acre is extremely low.

### NATURAL RESOURCES

On the slopes of the Carpathians and in Transylvania and Bucovina are valuable forests of such extent that they cover 24.5 per cent of the entire country. Unfortunately, the lack of transportation facilities makes many of these forests inaccessible and of no present importance. The timber within reach of railways and waterways is being extensively exploited at present, and in these areas the annual cut exceeds the annual growth. Although the largest proportion of the cut is consumed locally, increasing amounts are being exported to the Mediterranean countries. Improved transportation facilities would permit these exports to be materially increased without injuring the forests.

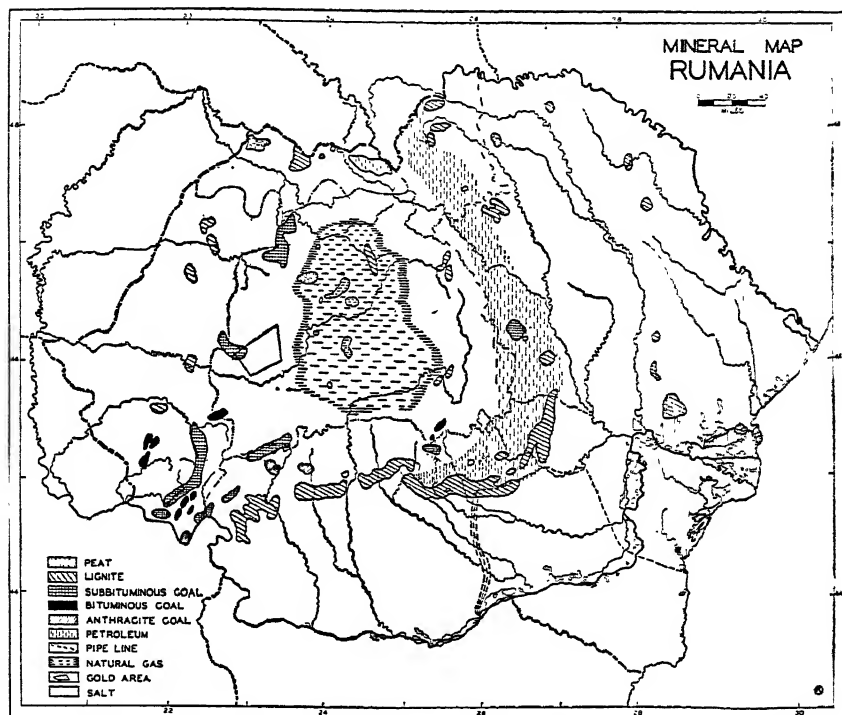
**Power Resources.**—Prior to the World War, Rumania had to depend upon imports to supply most of its needs for coal, for the nation contained only small deposits of low-grade lignite; but the addition of Transylvania and Banat greatly increased its reserves of this fuel. The former province today produces over 75 per cent of the coal and lignite mined throughout the nation, and its contributions have been nearly sufficient to render imports unnecessary.

Rumania at present produces about 2.5 per cent of the world's oil. Resources are available to increase this production materially, and markets are at hand to absorb larger exports. The only thing lacking is capital. Large amounts of natural gas are found associated with the oil. The production of this resource has more than doubled since 1920, and only awaits an enlarged demand to be still further increased.

The numerous rivers radiating from the central core of mountains provide potential water power to the extent of 1,600,000 horsepower.

Due to the lack of industrialization and to low living standards, slightly less than 7 per cent of this power had been developed in 1930.

**Other Resources.**—In addition to those already considered, salt was the only important mineral in the old kingdom. However, Banat and Transylvania contain a diversity of minerals. Iron, copper, gold, silver, lead, zinc and numerous others are to be found in commercial quantities. The resources are sufficient to permit a considerable increase in the production of most of these.



The distribution of minerals in Rumania. (By M. C. Roberts, from *Economic Geography*, vol. 9, p. 250.)

## MANUFACTURING

The slight importance of manufacturing in Rumania is well illustrated by the fact that only 7.8 per cent of the working population is engaged in this activity. Even this percentage is larger than the one prevailing prior to the World War. At that time industrial activity was restricted to the food industries, oil refining, and the operation of saw-mills. As a result of the peace treaties, the iron, textile, chemical and sugar industries of Transylvania and Bucovina, and the iron and



- Michael, L. G., "The Agricultural Situation in Rumania," *Report F. S. 26*, U. S. Department of Agriculture, Bureau of Agricultural Economics, Washington, 1926
- "Agricultural Survey of Europe, The Danube Basin, Part 2," *Technical Bulletin No. 126*, U. S. Department of Agriculture, Washington, 1929.
- Rouček, J. S., *Contemporary Rumania and Her Problems*, Stanford University Press, Palo Alto, 1932.
- "Rumanian Peasant and Agriculture," *Journal of Geography*, 1932, vol. 31, pp. 279-287.
- "Economic Geography of Rumania," *Economic Geography*, 1931, vol. 7, pp. 390-400.
- "Rumania; An Economic Handbook," *Special Agents Series, No. 222*, U. S. Department of Commerce, Washington, 1924.
- Sanders, E. M., "The New Rumanian State," *Geographical Review*, 1923, vol. 13, pp. 337-397.
- "Roumania," *Journal of the Manchester Geographical Society*, 1925, vol. 39, pp. 49-68.

## HUNGARY (MAGYARORSZÁG)

FROM the Carpathians to the Dinaric Alps, and from Bratislava to the Iron Gate lies a vast basin once covered by an inland sea. Light rainfall and extremes of temperature made it treeless, while rich lacustrine and loessial soils encouraged a luxuriant growth of grass. What an ideal home it offered for those wild horsemen sweeping in from the Asiatic steppes! At first these invaders pursued their traditional activities of following their flocks and herds and raiding their more settled neighbors, but soon they too settled down, and, by turning their attention to the cultivation of the soil, made of this mighty plain one of the greatest granaries of Europe. Meanwhile they extended their influence until all portions of this natural geographical unit were brought under their control. Through the various vicissitudes of warfare they maintained their rule for over 1000 years. It remained for the Treaty of the Trianon, following the World War, ruthlessly to tear asunder this unity and deprive Hungary of two-thirds of its lands and peoples.

Hungary suffered more, and with less justification, than any other of the Central Powers as the result of its part in the World War. In reducing it to one-third of its former size and population, ethnic and geographic considerations were alike disregarded. Over one-third of the total Magyar population was detached and included within neighboring states. The nation was deprived of most of its minerals and forest lands, and even its most fertile grain areas were given to its neighbors. To add to its difficulties, a Bolshevik revolution broke out following the Armistice, and while this was under way the Rumanians invaded the country and carried off every possible form of movable wealth. Little wonder that more bitterness exists among the Hungarians than among any other of the defeated peoples, and little wonder that they are only awaiting a favorable opportunity to revise the terms of the peace treaties. It may be safely said that Hungary and its boundaries constitute one of the most dangerous of the problem zones of present-day Europe.

## POPULATION

**Race and Characteristics.**—The Magyars were originally members of the Finno-Ugrian racial group. However, admixture with the Slavs and the absorption of immigrants of various racial stocks have caused them to change somewhat in appearance and characteristics. Nevertheless, their language has been little changed, and retains its essential Turanian features.

They are an interesting people, and one whose characteristics reflect something of their eastern origin. Their vivacity, excitability and fiery temperament, as well as their fatalism and conservatism, are among their most common characteristics. They are also intelligent, and are especially noted for their good nature and hospitality. One is struck by their vitality and energy, which differentiates them from their more highly civilized western neighbors.

Although pre-war Hungary contained large minority groups, the Magyars make up some 90 per cent of the population of the present state. Scattered groups of Germans, Jews, Slovaks and Rumanians are to be found, but their numbers are too small to constitute any serious minority problem. The real problem of the present and the future concerns the more than 3,000,000 Magyars whom the new boundaries have placed outside of the Hungarian state.

**Size and Distribution.**—The population of Hungary in 1930 was some 8,700,000, or slightly more than that of New England. This gives the country as a whole a density of 242 per square mile, which is high for a state which is primarily agricultural. Some 42 per cent of the population reside in cities of 10,000 or over. This again is high for a farming country, but changes in significance when one realizes that many of the larger cities cover tremendous areas, and are really enlarged agricultural villages with a considerable proportion of the population devoting its attention to the soil. Debrecen, Szeged and Budapest are the only cities with a population of over 100,000, and the latter is the only one with a population of over 1,000,000. As the nation is primarily agricultural, the distribution of population varies in accordance with differences in rainfall and in the fertility of the soil. As these conditions are more favorable in the north and west, population density is slightly greater in those sections.

## AREA

In spite of the fact that the Treaty of the Trianon reduced Hungary to one-third its former size, it still has an area of 35,875 square miles, or approximately the same as that of the State of Indiana. The limited size of the nation is likely to create a problem in the future, for the density of population is already great for an agricultural state, and the increase in population is rapid. Thus the Hungarians are likely to be forced either to practice more intensive forms of agriculture or to turn their attention to an increasing degree toward industry and commerce.

## SITUATION AND BOUNDARIES

The present state of Hungary occupies the central part of the Hungarian plain. Only on the west and the north does it touch the highlands which border this giant basin. Its boundaries are largely artificial and political, rather than physical. It is true that the Drava and the Danube bound it on the northwest and southwest, but unfortunately they form ineffective barriers, for they unite rather than divide the people of their valleys, and offer but slight obstacles to invading armies.

The commercial advantages and political handicaps of such a location are equally obvious. Seated athwart the Danube, the country has water contacts with the Black Sea and with central Europe. Through it pass the principal railway routes from western Europe to the Black Sea and the *Ægean*. Toward the east rail lines lead across the Carpathians to Poland, and to the west they connect the nation with the Adriatic at Fiume. Its commercial contacts with all portions of the continent are thus excellent. Hungary has the added advantage of being close to the great industrial centers of Austria, Bohemia and Germany, with all of which it is connected by both rail and water. These constitute large and important markets for its agricultural surplus, and can provide it with needed manufactured goods.

From a political point of view, the nation's location and boundaries have little to commend them. Hostile states surround it, except on the west, and all of these states contain large Hungarian minorities which tend to keep international feelings at the boiling point. No barriers which might check military aggression lie between these states and Hungary. These conditions, together with the unusually strong spirit

of patriotism among the Hungarians, are likely to result in the development of a militaristic state as soon as the limiting provisions of the peace treaties can be safely revoked. Such a state of affairs bodes ill for the future peace of central Europe.

### CLIMATE

In the winter the cold biting winds from the Russian high-pressure area sweep over the Carpathians and frequently bury the Hungarian plain under a blanket of snow. They lock the earth tight with a padlock of frost, and so freeze the waters of the placid Danube that navigation is impossible for an average of 37 days each year. In the summer conditions are reversed. The sun beats down mercilessly on the sweating peasant, and the heat is relieved by only occasional thunder showers. With monthly means that vary from 25 degrees Fahrenheit in January to 71 degrees Fahrenheit in July, the country has a true continental climate.

The rainfall is light, seldom exceeding 25 inches, and comes mostly in the form of sudden showers during the spring and early summer months. Unfortunately it is variable, so that one year the farmers' crops may be burned up by drought, while the next year they may be washed out by floods. Rainfall is greatest in the west, where it ranges from 24 to 40 inches annually; it declines toward the east, where it ranges from 16 to 28 inches.

Such a climate is more favorable for grass than for forests, so that most of the plain is a natural steppe land. It is little wonder that it proved attractive to the pastoral Magyars. Fortunately, also, it is favorable for such grains as corn and wheat, and has assisted in making Hungary an important grain-exporting country.

### NATURAL REGIONS

#### THE GREAT ALFÖLD

The Bakony Erdő, or the Bakony Forest, divides the Hungarian plain into two major units which differ somewhat in physical and in human development. To the west of these mountains lies the fertile and rolling expanse of the Little Alföld, while to the east stretches the vast expanse of flat steppe country known as the Great Alföld. Although considerable portions of this plain have been assigned to Czechoslovakia, Rumania and Yugoslavia, all of it remains ethnically

and culturally Hungarian. Also, enough still lies within the boundaries of Hungary so that it forms the largest and most productive portion of that country.

The Great Alföld is a rich steppe region. One might almost imagine that nature had detached a portion of the Black Earth region of Russia, and set it down within the protective arc of the Carpathians. On all sides the flat, featureless plain advances to meet the horizon. The neat, whitewashed houses of the farming villages, and occasional peasants in their picturesque costumes, alone break the monotony of the landscape. The luxuriant growth of grass and the fine stand of grain



The University of Szeged with the Tisza River in the foreground. (Courtesy of the Royal Hungarian Consulate, Cleveland, Ohio.)

to be seen on all sides bear ample testimony to the fertility of the soil. Throughout most of the region the lacustrine sands and clays are covered with rich loessial and alluvial soils. In a portion of the area between the Tisza and the Danube, and in a few other sections, the appearance of the landscape changes. The continuous sod breaks up into bunch grass, and the grain fields disappear. Instead, shepherds and herdsmen in their sheepskin coats guard large flocks of sheep and care for extensive herds of cattle and horses. Here also the fields are larger and the villages much farther apart. The cause of all these changes is the appearance of a coarse, sandy soil. In places the sand even appears in dunes, and there great groves of locust trees have been planted to anchor the dunes.

Through this plain wander numerous rivers, the most important of which are the mighty Danube and its principal tributaries, the Tisza, Drava, and Sava. The Danube was formerly a wide, meandering stream, but the Hungarians have straightened it and in places narrowed it, so that its effectiveness as a transportation medium has been materially increased. Over it passes a constant succession of boats of all types, touching such ports as Regensburg, Wien, Bratislava, Budapest and Beograd. The local travel on the river is great, although little commerce moves between Hungarian ports and the sea. In places the banks are low and marshy, forcing cultivated fields and towns to be located far back from the river. Elsewhere they are sufficiently high to provide drainage and protection from floods, and here towns crowd close to the river and cultivated fields extend nearly to the water's edge.

Today the Sava lies entirely outside of the boundaries of Hungary, and the Drava forms only a portion of its southwestern frontier. The Tisza, however, flows through the widest and most productive portion of the nation, and plays an important part in its life. Its very slight fall renders it sluggish, and its numerous meanderings and mud banks handicap navigation. It is especially noted for its sudden floods in the spring, due to the melting of the mountain snows. Its low banks and the flatness of the land cause these flood waters to cover wide areas and consequently to do much damage. Crops are frequently washed out, and riverside towns are swept away. To protect the country from such damage, hundreds of miles of dikes have been constructed along the Tisza and its tributaries. These floods are not entirely harmful, for they serve to irrigate the lands and to spread over them a thin layer of fertile mud which adds to the productivity of the soil.

**Agriculture.**—The Great Alföld contains the major portion of Hungarian agriculture. Although variations in soil cause local differences in methods, nearly all the farmers depend upon the raising of grains and livestock. The valley of the Tisza and the lands to the east of it are especially fertile, and in these areas are raised most of the tobacco and sugar beets. This is also one of the great wheat-surplus regions. Barley and rye are the principal crops on the lighter soils to the east of the Danube, while corn is raised throughout the entire southern portion of the plain. In the more rolling lands between the Danube and the Bakony Erdő wheat, rye and barley compete for importance. Throughout the plain as a whole, wheat is the most important crop, with corn a rather poor second. Cattle and horses are to be found on most of the farms, although in the drier sections sheep tend to replace

cattle. Extensive grazing is carried on on the sandy areas between the Tisza and the Danube, and on the swampy sections bordering the rivers. The Hortobagy Plains near Debrecen have long been noted for their fine horses.

Nearly one-third of the productive portion of the plain is held in large estates, in spite of the efforts of the government to bring about a more equable distribution of the land. The owners of these estates live either in large, centrally located manor houses or in the cities, the actual work being done by tenant farmers. The peasant-owned farms are mostly small, but are carefully cultivated by the farmer and his



Peasants harvesting corn in western Hungary. (Courtesy of O. Starkey.)

wife. Most of the peasants, whether tenants or owners, live in attractive little agricultural villages. Their carefully whitewashed houses of sod, with the artistically colored windows and doors, present a very neat and pleasing appearance. The peasants themselves give additional color to the picture, for they have continued to wear their picturesque national costumes to a greater extent than almost any other group in Europe.

Agricultural methods resemble those of the middle-western portion of the United States. The use of machinery is less common, but is increasing. Diversified farming, with rotation of crops and the raising of numerous domestic animals, is common in both regions. Their production per acre of all crops except corn also compares favorably with



our middle west. The Hungarian government is doing much to improve agricultural methods, and is thus steadily reducing any present advantage which the United States may enjoy.

**Minerals.**—The Great Alföld is devoid of mineral wealth, except for desposits of peat and lignite. The former is found in the more poorly drained portions of the plain. Large deposits of high-grade lignite are being extensively mined in the districts around Pécs. Other deposits of a lower grade are known, but are almost unused at present.

**Industry.**—Industry is of but slight importance. There is some manufacture of sugar, flour and other food products at Debrecen and Szeged, and the lignite fields of Pécs have encouraged some production of agricultural machinery. However, the Great Alföld is and probably always will be primarily agricultural, and what manufacturing develops will be concerned with the preparation of these agricultural products for market.

#### THE BAKONY ERDŐ

As has been previously noted, relief becomes more varied in the territory to the west of the Danube. Hills interrupt the flatness of the plain, and one large depression is occupied by the brackish waters of Lake Balaton, said to be the largest lake in central Europe. To the west of this rise the folded ridges of the Bakony Erdő, which attain an elevation of from 2000 to 2500 feet, and divide the Hungarian plain into the 'Little and Great Alfölds. These highlands are continued to the northeast of the Danube in the Matra and the Hungarian Ore Mountains.

All of these mountains receive greater rainfall than the plain, and are consequently densely forested with beech and oak. These forests provide ideal forage for swine, which are raised in considerable quantities. On the volcanic soils of the mountain slopes near Budapest the peasants specialize in raising the vine, while 150 miles to the northeast are produced the Tokay wines famed throughout Europe for their excellence. Some of the slopes are also clothed with orchards, and a variety of temperate fruits are produced.

Within these mountains is to be found most of the remaining mineral wealth of the nation. Numerous quarries produce marble of excellent quality, and lignite deposits are worked at Tata (Totis) and Eszterson (Gran). To the north of Miskolcz, near the Slovakian border, is the only remaining iron mine in Hungary. Although limited,

these resources are of considerable importance to the nation, as it was deprived of all its other mineral wealth by the peace treaties.

**Budapest.**—In cutting its way through these highlands, the Danube has hewn out the Vacz (Waitzen) Gorge. As this gorge provides the most available passageway between the Great and Little Alfölds, its strategic importance has always been great. It was natural, therefore, that the Hungarian capital and principal city should be established at some point along its course. Although the early capital was located at the western end of the valley on the rocks of Eszteron, the greater size and productiveness of the Great Alföld soon dictated that the principal



Budapest and the Danube. (Courtesy of the Royal Hungarian Consulate, Cleveland, Ohio.)

political and economic center should be located at the eastern end of the gorge. Here the old Roman camp of Aquincum offered a favorable site. There was hard rock on either bank, and an island in the channel facilitated the bridging of the river before it attained its full width in the plain. This site was also favorable because it was the natural meeting place of the pastoral and agricultural industries of the plain and the mining and forestry industries of the highland.

Thus there arose on the right bank, among the hills of Buda, a city which soon became the governmental and cultural center of the kingdom. Unfortunately, however, these hills limited the growth of the city, but on the opposite bank the sandy plains of Pest offered opportunity for unlimited expansion. It was here on the left bank that

the greatest development took place. Buda contains the stately government buildings and palaces, together with the better residential districts. Pest, which far surpasses its right-bank rival in population, has become the center of commerce and industry in the nation. As a flour milling center it has ranked second only to Minneapolis, and it engages in such other typical industries as brewing, distilling, tanning, and the manufacture of agricultural machinery. Upon the city converge the rail lines which served all portions of the former kingdom. It accordingly attracts trade, and has logically become the commercial and financial center of the country.

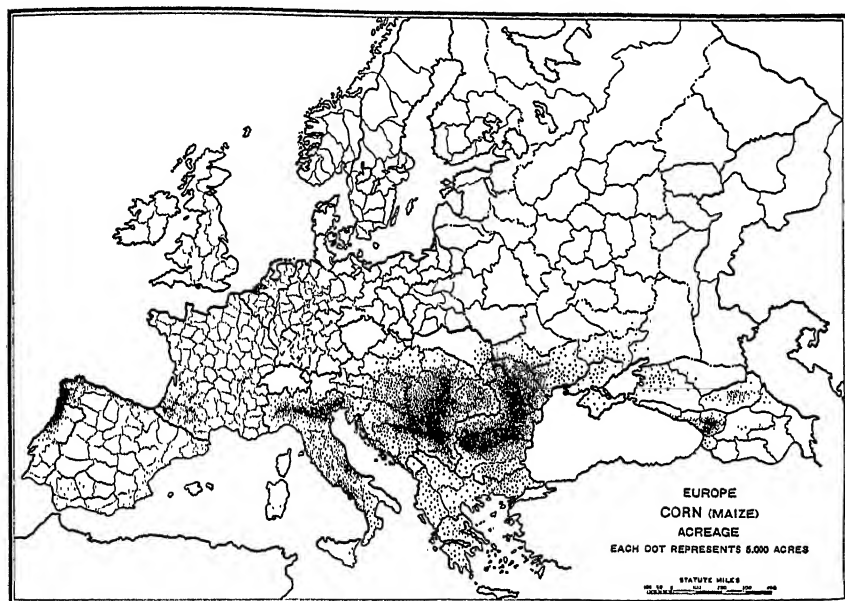
#### THE LITTLE ALFÖLD

Fortunately, the dividing highlands formed a natural bulwark which long made it possible for the Hungarians to check the Turkish advance. Consequently, while the Great Alföld was being overrun by these invaders and was having its economic and cultural life disorganized, human development in the Little Alföld was going peacefully forward. It is therefore not surprising that today the peoples of the smaller plain are somewhat more advanced culturally and economically than their fellow countrymen to the east. Other factors have also played a part in this advance. The Little Alföld adjoins Austria, and is readily accessible to Bohemia and southern Germany. From all of these areas it has drawn contributions in the form of peoples, trade and ideas which have materially enriched its life.

Physically the western plain differs from its eastern counterpart in both relief and size. It has an area of 6000 square miles, while the Great Alföld covers some 37,000 square miles. The Little Alföld is a rolling country of hills and valleys, in contrast to the flatness of the eastern plain. Its fertile soils and heavier rainfall, and its slightly more advanced population cause the agricultural production per acre to exceed that of the Great Alföld. It resembles the latter, however, in being dominantly agricultural and in specializing in grains and livestock. Here again the whitewashed houses of the little agricultural villages dot the landscape, and the picturesque costumes of the hardy peasants add the touch of color necessary to complete the attractiveness of the scene. Fields of wheat, rye and barley are to be seen on every side, and in the northern portion of the plain oats covers a large acreage. Although no sections are devoted entirely to grazing, horses and cattle are to be found on nearly every farm, and are more abundant than they are to the east.

## AGRICULTURE

Nature has decreed that agriculture shall be the principal activity of the Hungarians. The scarcity of fuels and industrial raw materials limits manufacturing, while broad fertile plains and a continental climate are ideal for the cultivator and the herdsman. The influence of these environmental factors is shown by the fact that 60 per cent of all the land in Hungary is under cultivation, while another 17.9 per



The Hungarian Plain has long been one of the principal corn-raising districts of Europe.  
(U. S. Department of Agriculture.)

cent is in permanent meadow and pasture. Consequently, it is not surprising to find that 58.2 per cent of the nation's working population are farmers.

Hungary, like most steppe areas, has proven to be especially suitable for the raising of grains, and cereals occupy some 75 per cent of all arable land. Considered from the point of view of both acreage and production, wheat is the most important crop raised, and is followed by corn, rye and barley. All of these grains are exported, but the exports of wheat and wheat flour are greater than the exports of all other grains combined, and constitute some 17 per cent of the value of all exports. Potatoes and sugar beets are being raised in increasing

amounts, and sugar exports are important. The tobacco of the Tisza Valley, and the wine and fruits from the slopes of the Bakony Erdő and the Hungarian Ore Mountains, are also produced in quantities sufficient to provide a considerable surplus for export. As agriculture becomes more scientific and intensive, there will probably be a greater diversification of crops. Such a change would be beneficial to the soil and to the economic position of the nation.

TABLE 130  
AREA AND YIELD OF PRINCIPAL CROPS IN HUNGARY  
(U. S. Department of Commerce)

Crop	Area (thousands of acres)			Yield (thousands of units— bushels, except as noted)		
	1909-1913 <sup>a</sup>	1926-1930	1932	1909-1913 <sup>a</sup>	1926-1930	1932
Wheat.....	3,712	3,996	3,897	71,493	82,075	58,593
Corn.....	2,192	2,655	2,877	60,813	64,102	95,893
Rye.....	1,608	1,647	1,578	31,377	29,281	32,205
Barley.....	1,322	1,080	1,165	32,369	27,712	32,497
Oats.....	849	665	575	28,464	24,068	19,510
Potatoes.....	619	657	729	71,118	67,333	61,921
Sugar beets.....	131	171	113	1,373 <sup>b</sup>	1,481 <sup>b</sup>	968 <sup>b</sup>
Grapevines.....	540 <sup>c</sup>	538	...	52,771 <sup>c d</sup>	66,027 <sup>d</sup>	...
Tobacco.....	93	56	61	112 <sup>e</sup>	63,410 <sup>e</sup>	84,877 <sup>e</sup>

<sup>a</sup> Within present boundaries.

<sup>b</sup> Unit, metric ton.

<sup>c</sup> 1911-1915 average.

<sup>d</sup> Unit, gallon of must.

<sup>e</sup> Unit, pound.

The Hungarians have never lost their interest in livestock or their love for pastoral occupations. In the dry and sandy areas between the Danube and the Tisza, large estates prevail, and they are chiefly concerned with the pasturing of sheep, cattle and horses. Cattle and horses are also raised on nearly every farm, but are proportionately more important on the large estates than on the small peasant holdings. Swine are fed on the mast of the oak tree in the forests of the Bakony Erdő, and are especially numerous in the corn-raising districts in the southern part of the country. The importance of livestock in the economy of the nation is illustrated by the fact that the export of animals and animal products slightly exceeds the exports of all crops.

As the future welfare of the nation is dependent upon its agriculture, the problems which confront this industry become of special importance. Among the more important of these is the matter of land

tenure. Today a comparatively few large estates occupy approximately one-third of the entire area of the country. On the other hand, many of the peasant holdings are not of sufficient size to provide an adequate standard of living. The government has taken steps looking toward the break-up of the large estates, but thus far the resistance of the owners has prevented much progress from being made.

To provide employment for the relatively dense and growing population, and to improve the economic position of the nation, agricultural standards must be raised, and unused land must be reclaimed. Progress in both of these directions is being made. Through education and



Herdsman with grazing cattle on the Hortobágy Plains. (Courtesy of the Royal Hungarian Consulate, Cleveland, Ohio.)

demonstration the government is actively engaged in improving agricultural methods. One handicap in this connection is the lack of capital for the purchase of sufficient agricultural machinery.

Much land also remains uncultivated, due to poor drainage, the danger of floods, and the character of the subsoil. The erection of dikes along the Danube and the Tisza has reclaimed a portion of this waste land, but an extension of these protective works can reclaim much more. Due to the lack of capital, only a start has been made in the draining of the marshy areas. Large areas have also been unused because of the underlying hardpan, but plans are now being drawn up for the reclamation of these lands; and their addition to the present cultivated acreage will make it possible to support a larger population and to raise living standards.

## INDUSTRY

The scarcity of fuels and industrial raw materials seriously handicaps Hungarian industry. As a result of the peace treaties, the nation lost 64 per cent of its coal reserves; and most of those which remain consist of lignite. All of the salt and natural gas, and most of the iron ore were also lost. The only minerals which are found in any quantities within the present boundaries are bauxite and building stone. With the loss of the surrounding highlands, most of the nation's forests were also transferred to its neighbors. Only some 12 per cent of its present territory is forested, and it is necessary to import considerable amounts of timber each year. With such limited resources, manufacturing has little opportunity to assume major importance, and so today it occupies the attention of only 18.6 per cent of the working population.

The greater number of the industries which do exist are concerned with the preparation of food products or beverages. Flour milling, sugar refining, brewing and distilling are typical of this group. Second in importance are the textile industries, especially those engaged in the spinning and weaving of cotton. This group has grown rapidly in recent years, and some textile fabrics are actually sold abroad, although normally imports far exceed exports. The chemical, leather and glass industries are also of importance, and have been growing. In fact, there has been a general advance in industrialization since the World War, measured both by the numbers employed and by the value of the product. As a result, the total value of manufactured articles produced annually exceeds the value of field crops. This does not mean, however, that Hungary is likely to become an industrial nation. Instead, it is likely that this activity will always be subordinate to agriculture.

## TRANSPORTATION

The rivers were long the principal avenues of transportation in Hungary. Their importance declined with the construction of roads and railroads, but the Danube continued to be extensively used. This river was improved by deepening and straightening its channel, and it carries much local and international commerce. The Tisza is also navigable, but it is not extensively used due to the variation in water

level and the presence of numerous mud banks. Altogether, the nation contains about 700 miles of navigable waterways.

Prior to the World War, Hungary had completed a comprehensive rail system, with lines radiating from Budapest and serving all portions of the plain. The losses which resulted from the peace treaties disorganized this system, and the Rumanians carried off much of the rolling stock. However, the disorganization was greater in the detached territories than within the present kingdom. During recent years order has again been restored, and the lost rolling stock replaced. Today the nation has a rail system which in extent and efficiency compares favorably with that of its neighbors but is below that of most western European powers.

### FOREIGN TRADE

The per capita foreign trade of Hungary amounts to \$35.20, and thus considerably exceeds that of Rumania, although it is less than that of any of the western European powers. Most of the Hungarian exports consist of foodstuffs, in either a raw or manufactured state. Imports, on the other hand, consist chiefly of industrial raw materials and manufactured products, with textiles, timber products and machinery the most important items. Austria, Czechoslovakia, Italy and Germany are the leading foreign markets for Hungarian goods, and Czechoslovakia, Germany and Austria provide most of the imports. The nation had a favorable balance of trade during only one year between 1921 and 1930, and the resulting drain upon capital and credit has seriously impaired its financial standing. The gradual intensification of agriculture and increase in manufacturing should not only increase the total foreign trade of Hungary, but ultimately result in correcting this unfavorable balance.

Hungary is entirely landlocked, and most of its foreign commerce must cross the territory of unfriendly powers. Prior to the World War, it had improved the port of Fiume, and had diverted sufficient traffic in that direction so that in 1913 the sea-borne trade of this port was 2,250,000 tons. Today Italy is trying to attract Hungarian trade in the same direction, but is having little success. The natural trade relations of the country are with the northwest, so that most trade moves by rail and river in this direction. This, combined with the low rates charged by the German railways, has caused much of the nation's overseas trade to pass through the port of Hamburg.



## BIBLIOGRAPHY

- Beynon, E. D., "Ancestral Occupations of the Hungarians," *Geographical Review*, 1928, vol. 18, pp. 606-615.
- "Isolated Racial Groups of Hungary," *Geographical Review*, 1927, vol. 17, pp. 586-604.
- Bovill, W. B. F., *Hungary and the Hungarians*, Methuen & Co., London, 1908.
- Michael, L. G., "Agricultural Survey of Europe, The Danube Basin, Part I," *Department Bulletin No. 123*, U. S. Department of Agriculture, Washington, 1924.
- Teleki, P., *The Evolution of Hungary and Its Place in European History*, The Macmillan Company, New York, 1923.
- Wallis, B. C., "The Peoples of Hungary,—Their Work on the Land," *Geographical Review*, 1917, vol. 4, pp. 465-481.

## SOUTHERN EUROPE

SOUTHERN EUROPE lies nearest to the older cultural centers of Asia and Africa, and it is not surprising that it became the home of the earliest European civilizations. Great centers such as Krêtê, Greece, Roma and Istanbul (Constantinople) arose and spread their cultures throughout the basins of the Mediterranean and its tributary seas. From these areas civilization passed to northern Europe and spread overseas to every land.

The physical environment was such as to favor the growth of early civilizations. The mild temperatures and winter rains, so typical of much of the region, simplified the problems of living and enabled the people to develop a surplus, and thus secure the leisure necessary to cultural advance. The complex relief of the south isolated and protected the limited areas of level land, so that each could be free to develop its own culture and could achieve a considerable amount of cultural individuality. At the same time the Mediterranean and the neighboring seas provided water highways over which the ships of the Phœnicians, Greeks and Romans carried the cultural and economic contributions of each center to other parts of the region.

The civilizations of the south rose quickly and frequently achieved great heights, but they were short-lived and declined rapidly. This decline was due in part to the dense and rapidly growing population, which soon taxed the capacity of the scattered plains to provide food and consequently led to a lowering of the standards of living. The climate also lacked the stimulation essential to continued effort, and wars and disease sapped the strength of the people. The region was therefore unable to retain its leadership, and the center of civilization shifted to northwestern Europe.

Today southern Europe is mostly a land of backward peasants who laboriously and intensively till their tiny fields, but because of their antiquated methods they reap little from their effort. An inadequate supply of such essential raw materials as coal, iron and timber has handicapped industry, and today Italy is the only nation in which modern manufacturing is important. Although the Mediterranean was once the center of European navigation and commerce, the shifting of trade routes and the declining standards of the population have caused com-

mercial supremacy to pass elsewhere. At present, Spain, Greece and Italy are the only southern states which possess any considerable merchant marines, or which are active in foreign trade.

The characteristics just described are possessed only by those territories in close proximity to the Mediterranean. Adjoining these are transition zones, within which are to be found conditions typical of both the south and neighboring portions of the continent. Thus eastern Yugoslavia and northern Bulgaria closely resemble adjoining portions of eastern Europe, while the Po Basin and parts of northern Spain contain many human and physical conditions typical of northwestern Europe. These regions will be considered as a part of southern Europe because the nations within which they are situated are physically or historically closely linked to the south.

## THE BALKAN PENINSULA (YUGOSLAVIA AND ALBANIA)

POLITICAL instability and economic backwardness have long characterized the Balkans. Under the Turkish rule, internal dissension was fostered in an attempt to prevent a unified movement for independence. Following the overthrow of the Turks, the peninsula was divided into a number of small and relatively weak states, whose international conflicts and internal intrigues fill a most unsavory page of European history. Attempts were made to achieve greater unity, but the physical complexity of the peninsula limited progress in this direction by dividing the population into a number of isolated groups. This isolation resulted in an unusual diversity of race, language, creed and political and economic interests, and has fostered unrest. Under such conditions, cultural and economic progress has been difficult, and it is not surprising that the Balkans contain many of the most backward peoples of Europe.

## LOCATION AND ROUTES

Throughout European history the Balkan Peninsula has been a great thoroughfare linking Europe with the more advanced of the Asiatic peoples. Only the extremely narrow waters of the Bosphorus and the Dardanelles separate it from Asia Minor, over whose arid plateaus routes lead to Mesopotamia and, by way of the Persian Gulf, to Persia and India. Northward over this route pressed the Turkish hordes bent upon the invasion of Europe. Southeastward over this route the products of western Europe today move toward the markets of the Near and the Far East. This was the route to be followed by the proposed Berlin-to-Bagdad railway, and although this German dream for capturing the trade of the east was shattered as a result of the World War, it is inevitable that eventually a railway will link the Persian Gulf with the North Sea, and provide more rapid and economical contacts with the east.

The narrow waters of the Bosphorus and the Dardanelles also link

the Black Sea with the Ægean and the Mediterranean. The Black Sea contains the only important Russian ports not seriously handicapped by ice, and taps the richest and most productive portions of that nation. Little wonder that Russia has long regarded the control of these waterways as essential to her safety and prosperity. The World War offers an excellent illustration of how effectively she can be isolated if their shores are held by an enemy power. This is one of the major reasons why Russia has been deeply interested in the southeastern Balkans.

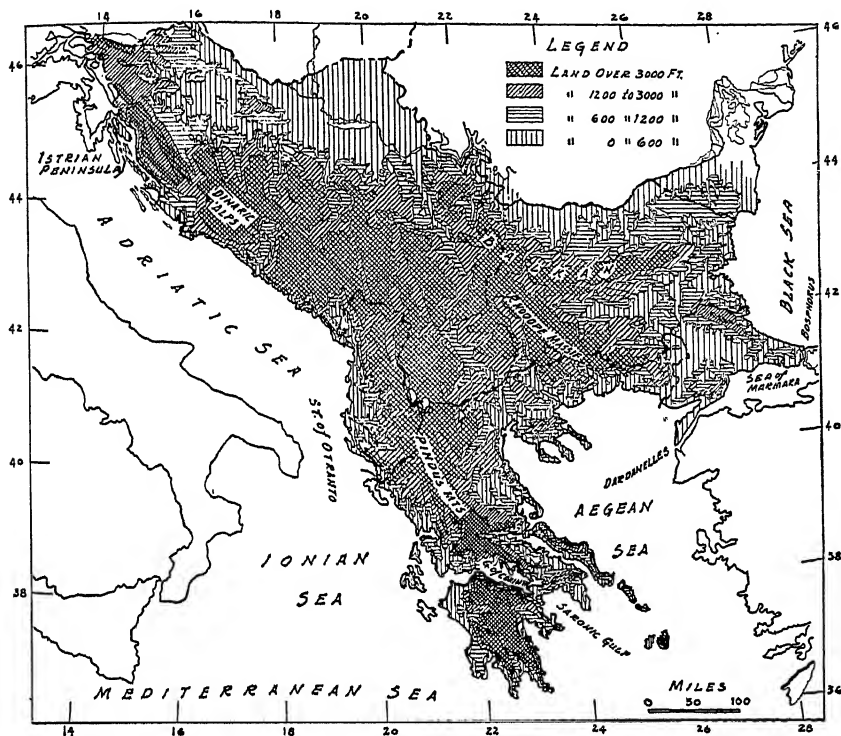
There are two major lines of approach to the peninsula by land. The first and most important is the Morava Valley. This depression connects toward the south with the Vardar Valley, thus providing an easy route through the Balkans from the Hungarian plain to the Ægean. Today an important railway follows this route, and through it passes sufficient trade to make Thessalonikē (Salonika) at its southern end one of the most important ports of the Ægean. The Morava Valley also carries the route which leads to Asia Minor by way of Istanbul (Constantinople). This route leaves the Valley at Niš (Nish) and proceeds by way of the Nishava and Maritsa Valleys. Today the Orient Express follows this route, which is an essential portion of any rail link between northwestern Europe and the Persian Gulf.

A second line of approach leads from the east by way of the Walachian and Hungarian plains. This was the steppe gateway, and through it came such typical steppe peoples as the Bulgars, Magyars, Avars and Slavs. Some of these groups forced their way southward through the Balkan passes, and occupied the fertile plains of Rumelia. Others pushed on to the west and occupied the highlands from Greece to Croatia. The historical importance of this route has thus been great, but, due to the similarity of products at either end, in commercial importance it has been far overshadowed by the Morava Valley route.

#### RELIEF

The Balkan Peninsula consists of a complex group of highlands bordered by small and disconnected plains. The highlands are composed of a wedge-shaped core of old crystalline rock flanked to the west and north by folded mountains. The central core is known as the Rhodope Massif, and is a portion of the Armorican Fold. It is a triangular region of complex mountains, with its apex at Beograd and its base

extending from Thessalonikē to Istanbul. Much of it is rugged, wild, and little developed. However, to the north it consists of wooded ridges separated by fertile valleys, while to the southeast, in Thrace, it is sufficiently low to permit extensive agricultural development. All the lines of approach to the peninsula lead into these highlands, and here Slavs, Greeks, Turks and Bulgars are mixed in such a way as seriously to complicate the political life of the region.



Relief map of the Balkan Peninsula.

Along the western side of the peninsula is a wide area of plateaus and folded ridges which constitute a southern extension of the Alps, and are known as the Dinaric-Pindus ranges. The Dinaric Alps form the northern part of this system, and extend from the Istrian Peninsula to the Drin Valley in northern Albania. They consist for the most part of porous limestone, with underground drainage and numerous sink holes. This Karst formation makes the surface of the land extremely dry and largely devoid of vegetation. Submergence has caused many of the ridges to form promontories and islands, thus providing the Adriatic coast with numerous harbors. Unfortunately, however,

the escarpment of the mountains renders contacts between these harbors and the interior difficult, and in many cases impossible.

South of the Drin Valley the character of the mountains changes. The Pindus ranges contain less limestone than the Dinaric Alps, and as a consequence the Karst formation is lacking. To the south, due to submergence, these mountains form the many peninsulas and islands of Greece. Between the ridges are valleys which are usually limited in extent, but are frequently quite fertile.

TABLE 131  
USES OF LAND IN BULGARIA, GREECE AND YUGOSLAVIA<sup>1</sup>  
(percentage of total for each country)

Country	Arable Land	Permanent Grass and Pasture	Forest	Other	Percentage of Arable Land under Cereals
Bulgaria.....	35.2	3.0	....	61.8	72.1
Greece.....	15.4	8.9	..	75.7	52.1
Yugoslavia.....	28.5	23.8	30.3	17.4	83.1

The Balkan Mountains run east and west through central Bulgaria, and constitute an extension of the Carpathians. These mountains slope gently to the Danube, but drop more precipitously to the south, where they are bordered by a narrow, fertile valley. To the south of this in turn lies a long longitudinal range of hills known as the Anti-Balkans. These are separated from the Rhodope Massif by the wide valley of the Maritsa.

The major relief features of the Balkan Peninsula originally extended eastward, and were continued in the highlands of Asia Minor and the Black Sea region. However, the crustal sinking which gave rise to the Black, Marmara and Ægean Seas, submerged a portion of these highlands and detached the Balkan features from their Asiatic counterparts. It is, nevertheless, easy to relate the features on either side of these bodies of water. The Balkan range continues in the mountains of the Krim Peninsula, and the Caucasus. The Pindus folds are continued in the Taurus ranges, and the Rhodope Massif finds its extension in the plateau of Asia Minor. The higher elevations of the submerged portions still rise above the surface and form the numerous islands and peninsulas of the Ægean and eastern Mediterranean.

<sup>1</sup> *Statistical Year Book of the League of Nations, 1931-32.*

## CLIMATE

The varied relief of the Balkan Peninsula results in wide variations in climate, which in turn tend to exaggerate the differences among its peoples. Proximity to Asia and the fact that the highest mountains occupy the western portion of the peninsula give much of it a continental climate. Only the Dalmatian coast and the southern portion of Greece have the summer droughts and mild winters so typical of much of the Mediterranean.

In winter the cold winds from the Asiatic high-pressure area sweep in and cause freezing temperatures in Bulgaria, Thrace, Macedonia, eastern Greece and the interior valleys of Yugoslavia. These winds also blanket the higher elevations with snow. On the other hand, these regions have hot summers which increase in intensity toward the south where, in the low-lying valleys of Greece, temperatures of over 100 degrees Fahrenheit are common. Sofiya (Sofia), with January and July means of 27 degrees and 69 degrees Fahrenheit respectively, and Beograd, with means of 29 and 72 degrees Fahrenheit for the same months, may be taken as typical of much of the peninsula. These areas also have their maximum rainfall in the summer, as the result of moisture drawn in from the Black Sea by the low-pressure area which forms over the lower Danube Basin. Such a climate is well adapted to the growth of cereals in the plains and forests and grass in the mountains.

On the other hand, the Dalmatian coast and western Greece have mild winters, with January temperatures of over 45 degrees Fahrenheit. The cold, dry, mountain wind known as the "bora" is the only disagreeable feature of the winter climate. This region also has most of its rainfall during the winter, as the result of the development of a low-pressure area over the Adriatic during that season. The rainfall increases from south to north, and the Dalmatian highlands have the heaviest rainfall of any section bordering the Mediterranean. The climate of these regions favors the growth of the vine, the olive, the fig, and winter grains. In places irrigation is necessary, and usually the streams from the bordering highlands afford ample water for this purpose.

## HUMAN DEVELOPMENT

The complex relief and varied climate of the Balkans have tended to perpetuate and accentuate the economic, political and cultural differ-



ences of its people. The interference of outside powers has likewise tended to fan the flames of racial and national animosities. Thus constant strife and bickering have sapped the strength and engaged the major attention of the Balkan peoples. Relief has also tended to isolate considerable portions of the population, and consequently to limit their economic and cultural contacts with the more active sections of Europe. In view of these factors, it is not surprising that a considerable proportion of the population is very backward culturally and economically.

Agriculture is the basic economic activity of the peninsula. It engages the attention of the great majority of the population, and provides most of the exports. Unfortunately, however, agricultural practice is very backward, and the yield of the land is consequently low. Despite a considerable quantity and diversity of industrial resources in the form of forests, water power and minerals, manufacturing is almost undeveloped, and as a consequence manufactured goods constitute the principal imports of all the Balkan countries. Commercial development is also backward. The per capita foreign trade of Albania, Bulgaria and Yugoslavia is among the lowest of any countries in Europe. Greece alone has any considerable trade or has developed any important merchant marine. The economic life of the Balkans is thus very backward, but with greater political and economic stability it should advance steadily.

### THE KINGDOM OF YUGOSLAVIA (KRALJEVINA JUGOSLAVIJA)

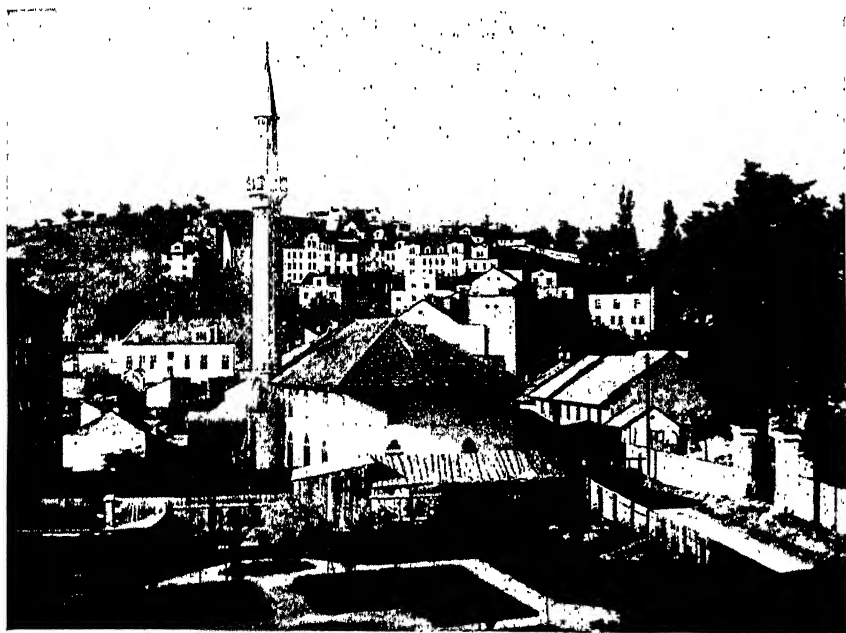
During the sixth and seventh centuries, three Slavic tribes, the Serbs, Croats and Slovenes, migrated from beyond the Carpathians and found new homes in the Balkan Peninsula. At the time of this invasion all of these people spoke the same language and had uniform cultural and economic standards, but, once established in their new home, nature went rapidly to work to break down this uniformity. Their valley communities were so isolated by mountain walls that the interchange of goods and ideas was difficult. Consequently, each tended to develop a distinct cultural and economic life in response to its own environment.

This differentiation was made more pronounced by the political history of these people. For 1200 years Turk, Magyar and Austrian divided and ruled them. Prior to the World War they were living under six governments, and each group reflected something of the life and ideas of the nation dominating it. Serbia and Montenegro alone were

independent, most of the remaining territory being under the control of the Austrians and Hungarians. The defeat of the Central Powers in 1918 offered for the first time an opportunity for the South Slavs to unite into an independent state. This opportunity was quickly grasped, and resulted in the organization of the Kingdom of the Serbs, Croats and Slovenes, the largest and most populous of the Balkan States.

### POPULATION

Although of one race, the Yugoslavs differ greatly in present development. The Slovenes are the smallest but the most advanced of



Sarajevo in Bosnia. (Courtesy of the Yugoslav Trade and Tourist Information Office, New York.)

the major groups. About 1,000,000 of them occupy the beautiful mountainous territory in the extreme northwestern part of the country. They are the most westernized of the South Slavs, and are an able, industrious people. All phases of economic and cultural life are well developed, and Ljubljana, the principal city of the Slovenes, compares favorably with centers of equal size in western Europe.

Some 4,000,000 Croats occupy the territory to the southeast of Slovenia, centering around the city of Zagreb. In cultural and economic

standards they rank below the Slovenes, but differences in environment have caused wide variations within the group itself. One portion occupies the Dalmatian coast and engages in fishing and fruit raising. A second portion consists of hardy, self-reliant mountaineers, some of whom remain to scratch a scant living from the sterile soil, while others have moved in tens of thousands to more fertile lands overseas. The third and most numerous portion of this group occupies the hills and plains in the northern portion of the country. They are the most capable agriculturalists among the Yugoslavs, and their numerous small villages display a degree of prosperity considerably above that of the nation as a whole.

The Serbs number some 6,000,000, and are the most numerous of the major groups. They are principally mountaineers, with all the faults and virtues of such people. Living in crude settlements among the mountain valleys or on the wooded slopes, the people are divided into family groups directed by powerful patriarchs. They are highly individualistic and conservative, regarding bravery and hospitality as the greatest virtues and cowardice as the greatest crime. Being extremely patriotic, they have assumed the dominant rôle in the government of the new state, a fact bitterly resented by the more advanced Croats and Slovenes. Upon their willingness to cooperate intelligently with the other groups depends the political future of Yugoslavia.

The South Slavs comprise some 83 per cent of the entire population. The remainder is made up largely of Magyars, Germans, Rumanians and Bulgars. Unfortunately, these minorities tend to keep alive international ill feeling, and to complicate the settlement of boundary difficulties with neighboring states.

According to the census of 1931, the population of Yugoslavia was 13,900,000, giving the nation as a whole a density of 144 per square mile. The greatest densities are to be found in the Morava Valley, in the included portion of the Hungarian plain, and in the northwest. The greater density of these areas is largely accounted for by the better possibilities which they offer for agriculture, and by their more advantageous location. As approximately 80 per cent of the population is engaged in agriculture, cities are relatively unimportant, and the nation contains only three with a population of over 100,000.

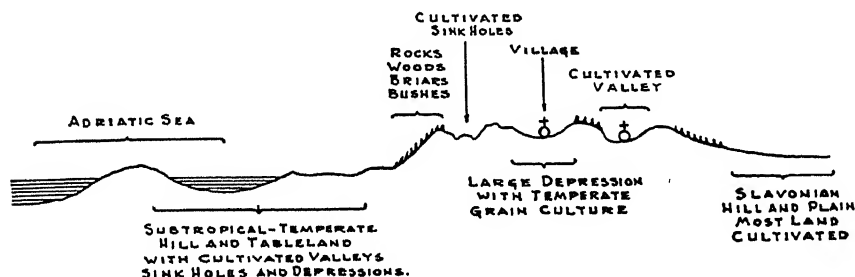
#### GEOGRAPHICAL DIVISIONS

There are four distinct geographical regions in the country: (1) the Adriatic coast lands, (2) the central highlands, (3) the north-eastern lowlands, and (4) the Morava-Vardar depression.

## THE ADRIATIC COAST LANDS

The Dalmatian coast provides an excellent example of longitudinal subsidence. The lower valleys of the outer chain of the Dinaric Alps have been submerged, but the mountain tops appear above the surface and form a series of islands paralleling the coast. The protected inner channel and the numerous good harbors encourage contact with the sea, while the lack of cultivable land prevents man from turning his attention to the soil. Unfortunately, the coast is largely cut off from contact with the interior by the sheer wall of the Dinaric Alps.

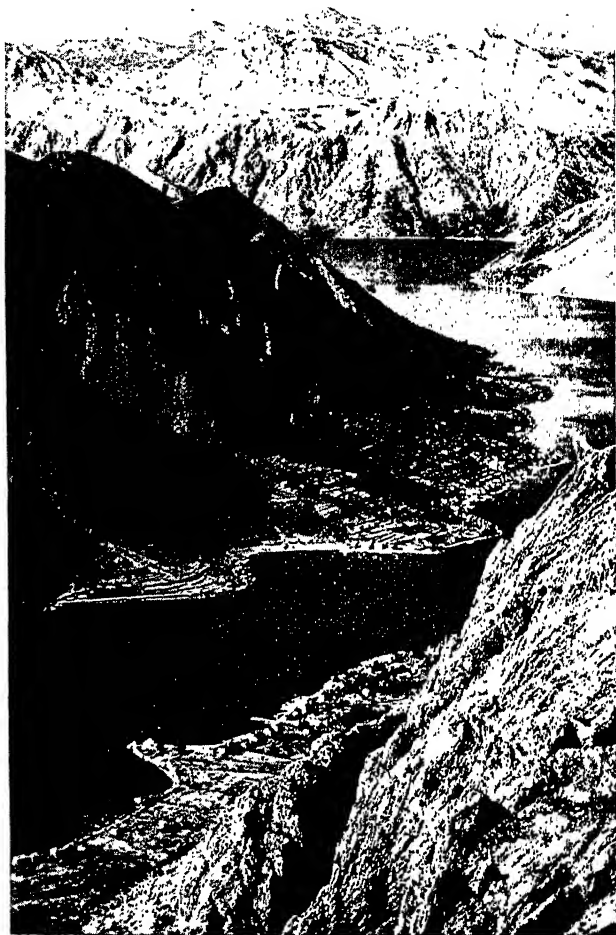
These factors early caused the population to congregate in small isolated city-states. Many of these were founded by the Greeks, but later they came under the control of Roma and Venezia, and even to-



Cross section of the Dalmatian coast and the Karst plateau. (After S. Passarge.)

day there is a large Italian element in the towns and cities. The Slav, forcing his way westward, here reached the coast, and his conflicts with the Italians over the control of the area are reflected today in the disputes between Italian and Yugoslav. Where soil and relief permit, this mixed population turns its attention to the growing of tobacco, the vine, olive and fig. However, the small amount of level land forced the population to become interested in maritime activities, and even the Slav became a seafarer. The precipitous mountain wall to the rear limits commercial contacts, so that the Dalmatian seamen were forced to gain their livelihood by fishing and piracy. The first activity is still of major importance, and commerce is increasing due to rail connections with the interior. When Fiume fell into Italian hands, Yugoslavia turned its attention to the development of its more southern ports. Split (Spalato), which is connected with the interior by a standard-gauge railway, has become the first port of the nation; the commerce of the ports on the bay of Kotor (Cattaro) is increasing, despite their poor rail contacts, and Sùsak receives most of the trade of the north.

Behind the coastal region lies the formidable barrier of the Dinaric Alps. The western portion of these mountains is composed of limestone, and the resulting Karst formation provides a living for only a very sparse population. Goats are grazed on the scanty vegetation of



The Bay of Kotor, showing a typical section of the Dalmatian Coast. (Courtesy of the Yugoslav Trade and Tourist Information Office, New York.)

the slopes, and toward the south there is some cultivation. This is carried on in "Poljes," or large depressions drained underground by sink holes. They are moist for a portion of the year, and produce good crops of hay and occasionally a little corn. The peasants who farm these areas live in small villages on their outer rims in order to be free from the

danger of occasional floods. However, the majority of the inhabitants of these mountains are engaged in pastoral pursuits. These people are quite backward due to their isolation, which is rendered more complete by the absence of transverse valleys connecting with the coast.

#### THE CENTRAL HIGHLANDS

The Karst formation attains a width of only between 60 and 90 miles. To the east of this strip the character of the highlands changes.



Highland scene in central Serbia. (Courtesy of the Yugoslav Trade and Tourist Information Office, New York.)

Surface streams and rivers replace underground drainage, and excellent forests of oak and beech replace the scanty vegetation of the coast ranges. The valleys also increase in width, and their alluvial soils permit the peasants to cultivate cereals and fruit. Large numbers of swine are raised in the oak forests, and the lower slopes support extensive orchards of plums and prunes. Isolation, lack of education, and extreme conservatism cause the peasants to follow backward and inefficient agricultural methods. Each family constitutes a nearly complete economic unit, and is chiefly concerned in supplying its own needs for food and clothing. Thus little surplus is produced for sale, and commerce is unimportant. In the northern part of the country the central highlands yield a considerable amount of lumber, much of which is exported through the port of Sûsak.

These highlands also contain quite a diversity of mineral wealth.

Precious metals have been mined since Roman times, and the salt industry around Dolnja Tuzla is of ancient origin. Small amounts of bituminous coal are mined in Serbia, and nearly every section of the country produces lignite. However, Slovenia and the district near Sarajevo produce the greater part of the 5,000,000 tons mined annually. In 1930 some 430,600 tons of iron ore came from the mines near Ljubljana in Slovenia and Varos in Bosnia. Bauxite is mined in large amounts near the Adriatic coast. Limited amounts of lead, zinc, copper, and manganese are also mined. Although conditions have improved within recent years, these mineral resources are not being exploited to anywhere near the extent possible, and mining methods are frequently antiquated. The lack of adequate transportation facilities throughout the highlands isolates many mineral deposits, and others are unused due to the backwardness of domestic industry. In this respect, the northern portion of the country is more favorably situated than the southern, for the Austrians and Hungarians had installed there numerous railways which linked the mining regions with the sea and with the industrial centers of Austria.

#### THE NORTHEASTERN LOWLANDS

The northeastern lowlands consist of a portion of the Hungarian plain with its bordering foothills. It is drained by the Danube, Tisza, Drava and Sava, whose broad valleys provide excellent agricultural lands, and whose waters carry much commerce. This forms the agricultural heart of the country. Its fertile plains have proven so attractive to the peasants that it is at present the most densely populated section of the nation. Prior to the World War, much of the land was held in large estates upon which agriculture was carried on on a more modern and scientific basis than throughout the rest of the country. Numerous railways and waterways provide cultural and economic contacts with neighboring areas, and have assisted in making this the most productive region of Yugoslavia.

The higher elevations between the Drava and the Sava, and the upper slopes of the foothills to the south of the Sava, are covered with forests of beech and oak. In these forests the peasants pasture large numbers of swine, which provide some of the most important exports of the country. The lower slopes are clothed with orchards and vineyards. Plums are the most important fruit, many being dried and exported and others being made into jam and brandy. The plains are grass-covered steppes and prairies, and contain wide areas of marsh

land along the Sava and the Tisza. Physical conditions closely resemble those in the Great Alföld of Hungary, and agricultural practice is much the same. Cereals occupy some 82 per cent of the cultivated lands. At present, over 43 per cent of the cereal acreage is devoted to corn, while 36 per cent is planted in wheat. Much wheat is consumed in the lowland areas, while corn forms the staple diet of many of the mountain peasants. Tobacco is another favorite crop of these lowlands, and is exported in large quantities. Horses, cattle and swine are raised on nearly every farm, and animal products constitute approximately one-third of the total exports of the country.

TABLE 132  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN YUGOSLAVIA  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as noted)	
	1926-1930	1931	1926-1930	1931
Wheat.....	4,811	5,390	81,327	98,789
Corn.....	5,510	6,158	117,711	126,688
Barley.....	1,003	1,105	17,464	18,000
Oats.....	948	979	22,759	18,242
Rye.....	545	623	7,399	7,614
Potatoes.....	570	588	43,305	40,197
Sugar beets.....	120	91	792 <sup>a</sup>	610 <sup>a</sup>
Tobacco.....	34	47	25,330 <sup>b</sup>	29,321 <sup>b</sup>
Grapevines.....	444 <sup>c</sup>	492	89,781 <sup>d</sup>	118,718 <sup>d</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> Unit, pound.

<sup>c</sup> 1926-1929.

<sup>d</sup> Unit, gallon of wine.

The inclusion of these lowlands within the state has given rise to a serious political problem, for they contain large groups of Magyars and Germans. Throughout portions of the area these groups are in the majority, and they bitterly resent their inclusion within the new state. This condition has tended to prevent friendly relations with Hungary, and is a menace to the security and stability of the nation.

Beograd, the capital and largest city of Yugoslavia, lies in the southern part of the lowlands, at the junction of the Sava and the Danube. Upon it converge the routes following the valleys of the Danube, Sava, Tisza and Morava. As a consequence, it occupies a site of great commercial and strategic importance. However, as a capital, it



lies too near the frontier, and it was partly in order to provide it greater protection that a portion of the Hungarian plain was included in the new kingdom.



Grain fields in the Danube Valley. (Courtesy of the Yugoslav Trade and Tourist Information Office, New York.)

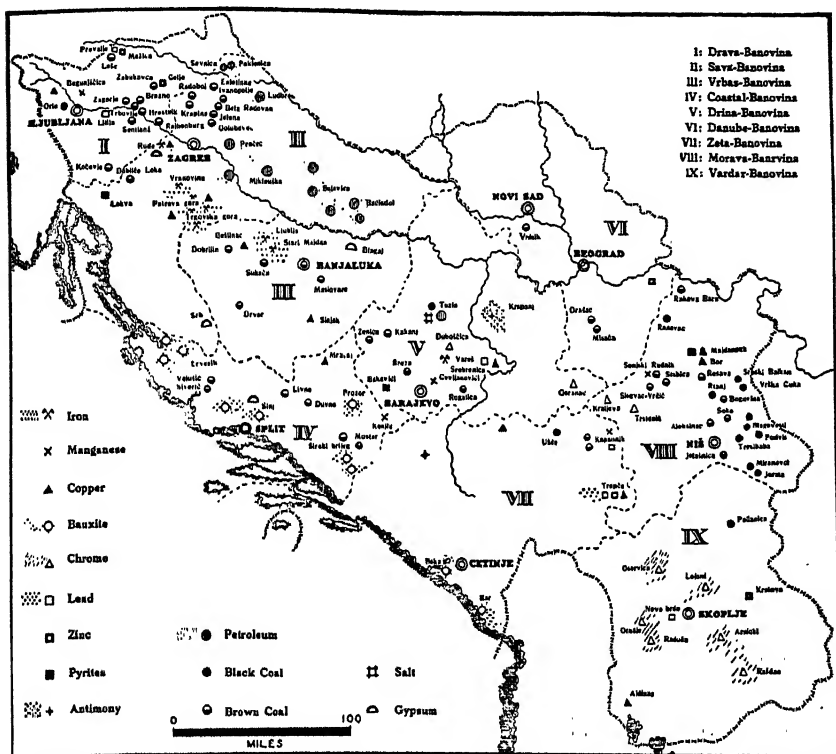
#### THE MORAVA-VARDAR DEPRESSION

The Morava Valley was the agricultural center of old Serbia. Its wider, lower portion is an extension of the Hungarian plain, within which the Serbian peasants raised cereals in the more level areas and fruit and swine on the slope. The upper portion of the valley consists of a series of old lake basins, whose fertile soils are largely devoted to cereals. In the Vardar Valley the influence of the Mediterranean climate is evident in the appearance of tobacco, rice, the mulberry tree and the vine. Unfortunately, however, political unrest has caused this valley to be but slightly developed, despite the fact that it is potentially rich.

#### INDUSTRY AND FOREIGN TRADE

In spite of abundant resources in the form of timber, water power, minerals and agricultural products, industries are but slightly developed

throughout the country. Those which do exist are for the most part small, and are engaged in the preparation of agricultural and timber products. Industrial activity has increased slightly within recent years, and should advance more rapidly in the future. However, such an advance must depend upon the maintenance of political stability, the introduction of foreign capital, the improvement of transportation facili-



Location of the important mines and ore deposits in Yugoslavia. ("Yugoslav Economic Information Service," by Joseph S. Roucek, from *Economic Geography*, vol. 9, p. 420.)

ties, and an expansion of the domestic market through an increase in living standards.

The present backward condition of industry is well indicated by the character of the nation's foreign trade. Foodstuffs and live animals represent 50 per cent of all exports, and industrial raw materials represent 43 per cent. Timber, wheat, copper, corn, eggs and fruit are the leading individual items. On the other hand, manufactured goods represent 73 per cent of all imports, and industrial raw materials and semi-manufactured goods represent 18 per cent. The leading individual

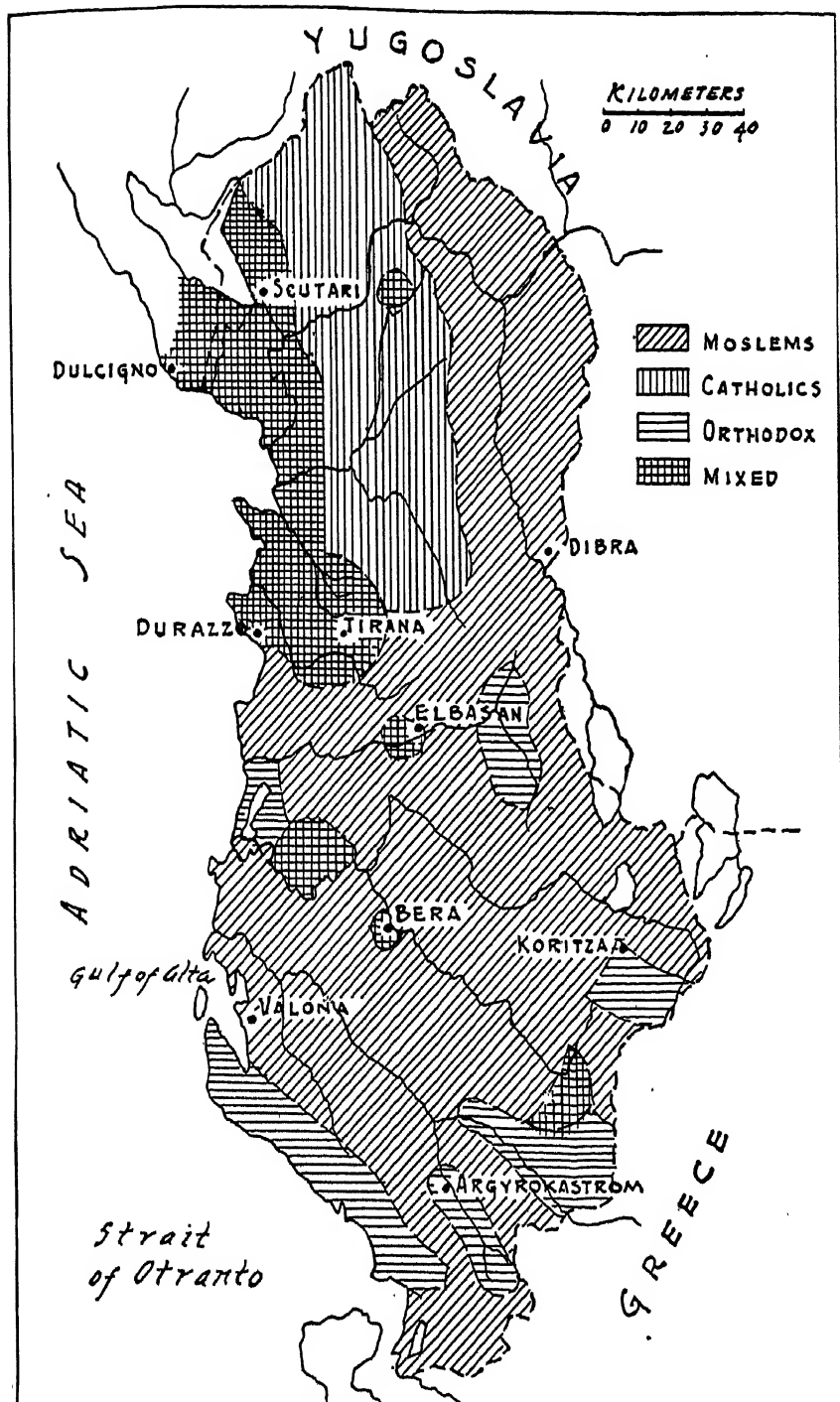
items are cotton and woolen fabrics, iron and steel, machinery and chemicals. Such neighboring industrial states as Italy, Austria, Germany and Czechoslovakia provide the greatest markets for Yugoslavian products and furnish most of the imports.

### ALBANIA (SHQYPNIË)

The Albanians are an ancient people, and have shown remarkable capacity for resisting assimilation. Today the major portion of the population is divided into two groups. In the north are the fierce and lawless Ghegs, descendants of the early Illyrians. They are largely ignorant and superstitious, but make magnificent soldiers. The majority are Mohammedans, but the influence of Roman penetration is shown in the extreme north by a considerable group of Roman Catholics. To the south are the Tosks, who, having come under Greek influence, are not as primitive as their northern neighbors. Many of this group belong to the Greek Orthodox Church, while others are Mohammedans. In fact, some 68 per cent of the entire population are followers of Islam; the Christian minorities are confined to the northern and southern borders of the country. Lack of education and superstition characterize almost the entire population. The ruggedness of the country, which makes it difficult for law to penetrate, and the prevailing tribal type of organization have made deadly blood feuds common in all sections. As a result, the homes are miniature fortresses, and in the interior no man thinks of going out-of-doors unless fully armed.

The strategic location of the country and the rivalries of neighboring powers have favored its independence. It is really the meeting place of the Serb, the Greek and the Italian. Its importance is enhanced by its control of one side of the Strait of Otranto, thus giving it partial control of the entrance to the Adriatic. Its territories also include the Bayana and Drin Valleys, which provide the best routes to the interior of the peninsula to be found south of Fiume. These considerations have favored the retention of this territory in the hands of a weak power. They have, however, caused Albania to be the center of international intrigue and pressure. At present, Italian influence is dominant in both the economic and the political life of the nation, a condition which Yugoslavia views with considerable alarm.

Albania has a population of some 840,000 in a territory approximately the size of Switzerland. It is a mountainous country, whose slopes are deep cut by streams which run to the Adriatic. The land is especially rugged toward the north, and in this area is to be found one



The distribution of religious faiths in Albania. (After Newbigin.)

of the least-known regions of Europe. In the central part of the country the slopes are more rounded and the valleys wider, thus creating conditions favorable for the support of a larger and more prosperous population. The relief again becomes more rugged in the south, and here grazing is almost the sole activity of man. Level land throughout the country is limited to local basins and to a narrow coastal plain. This latter is the result of emergence, and, although fertile, it is marshy and malarial, and supports only a very sparse population.

In such an environment the population is almost entirely engaged in pastoral activities and primitive agriculture. The lack of transportation facilities compels the peasants to be almost self-supporting. They produce their own food, clothing and shelter, and buy or sell very little each year. There are only one short railway, few bridges, and only 1038 miles of roads throughout the country. Recently conditions have improved, due to the assistance of the Italians in the construction of military highways and a railway from Durrës (Durazzo) to Tiranë (Tirana). However, the average Albanian seldom leaves the vicinity of his mountain home. His time is taken up in the pasturing of sheep and cattle, or in the cultivation of small valley fields. Usually neither the flocks and herds nor the fields are his, but belong to some hereditary chieftain or to the state.

In such a society towns and cities are relatively unimportant. In Albania they contain only 13 per cent of the population. Tiranë, the capital, and Korçë (Koritsa) are the principal cities, but are little more than enlarged villages. The nation has five ports, but most of the trade passes through Durrës.

The principal products of the country are timber, cattle, wool, hides, cheese, dairy products, fish, olive oil, tobacco, and some grain. These also form the nation's exports, while the imports consist of manufactured goods and some food. Italy takes 57 per cent of the exports and supplies 61 per cent of the imports, the rest of the trade being widely scattered. Both the total and the per capita trade are extremely low, indicating again the backward economic condition of the country.

## BIBLIOGRAPHY

### SOUTHERN EUROPE

- Carrier, E. H., *Water and Grass: A Study in the Pastoral Economy of Southern Europe*, Christophers, London, 1932.  
Heaton, E. W., *Mediterranean Region*, Henry Palmer & Co., London, 1923, rev. ed.

Newbigin, M. I., *The Mediterranean Lands*, Alfred A. Knopf, New York, 1924.

——— *Southern Europe*, Methuen & Co., London, 1932.

Semple, E. C., *Geography of the Mediterranean Region*, Henry Holt & Co., Inc., New York, 1931.

——— "The Barrier Boundaries of the Mediterranean Basin and its Northern Breaches as Factors in History," *Annals of the Association of American Geographers*, 1915, vol. 5, pp. 27-59.

——— "Climatic Influence in Some Ancient Mediterranean Religions," *Scottish Geographical Magazine*, 1925, vol. 41, pp. 218-266.

## THE BALKAN PENINSULA

Armstrong, H. F., *The New Balkans*, Harper & Brothers, New York, 1926.

——— *Where the East Begins*, Harper & Brothers, New York, 1929.

Bell, H. T. M., *The Near East Yearbook and Who's Who, Yugoslavia, Rumania, Bulgaria, Greece and Turkey*, The Near East, Ltd., London, 1927.

Cvijic, J., *La Péninsule Balkanique*, Librairie Armand Colin, Paris, 1918.

——— "The Zones of Civilization of the Balkan Peninsula," *Geographical Review*, 1918, vol. 5, pp. 470-482.

——— "The Geographical Distribution of the Balkan Peoples," *Geographical Review*, 1918, vol. 5, pp. 345-361.

Day, C., "The Pre-War Commerce and the Commercial Approaches of the Balkan Peninsula," *Geographical Review*, 1920, vol. 9, pp. 277-298.

Giles, F. L., "Boundary Work in the Balkans," *The Geographical Journal*, 1930, vol. 75, pp. 300-313.

Hogarth, D., *The Nearer East*, D. Appleton-Century Co., Inc., New York, 1902.

Newbigin, M. I., *Geographical Aspects of the Balkan Problems in Their Relation to the Great European War*, G. P. Putnam's Sons, New York, 1915.

——— "The Human Geography of the Balkans," *Journal of Geography*, 1919, vol. 53, pp. 112-113.

Panaretoff, S., *Near Eastern Affairs and Conditions*, The Macmillan Company, New York, 1922.

Woods, H. C., "The Balkans, Macedonia and the War," *Geographical Review*, 1919, vol. 6, pp. 19-36.

## YUGOSLAVIA

Baerlein, H., *The Birth of Yugoslavia*, Parsons, London, 1922.

Buchan, J. (ed.), *Yugoslavia*, Nations of Today Series, Houghton Mifflin Company, New York, 1923.

Malojevic, B. Z., "The Kingdom of the Serbs, Croats and Slovenes," *Geographical Review*, 1925, vol. 15, pp. 70-83.

Patton, K. S., "The Kingdom of the Serbs, Croats and Slovenes: A Com-

mercial and Industrial Handbook," *Trade Promotion Series No. 61*, U. S. Department of Commerce, Washington, 1928.

Shackleton, M. R., "Economic Resources and Problems of Yugoslavia," *Scottish Geographical Magazine*, 1925, vol. 41, pp. 346-365.

Stanoyevich, M. S., "The Ethnography of the Yugoslavs," *Geographical Review*, 1919, vol. 7, pp. 91-97.

——— *Slavonic Nations of Yesterday and Today*, H. W. Wilson Company, New York, 1925.

#### ALBANIA

Almagia, R., "Modern Albania: A Review," *Geographical Review*, 1932, vol. 22, pp. 464-473.

Blake, M., "Economic Conditions in Albania," *Trade Information Bulletin No. 83*, U. S. Department of Commerce, Washington, 1923.

Nowack, E. A., "Contribution to the Geography of Albania," *Geographical Review*, 1921, vol. 11, pp. 503-550.

Woods, H. C., "Albania and the Albanians," *Geographical Review*, 1918, vol. 5, pp. 257-273.

THE BALKAN PENINSULA (*Continued*)  
(BULGARIA, TURKEY IN EUROPE AND GREECE)

## BULGARIA (BLGARIYA)

DURING the seventh century a horde of horsemen from the Asiatic steppes swept into the plains between the Balkan Mountains and the Danube, conquering and consolidating the scattered Slavic tribes which occupied this region. The invaders were few in numbers, however, and were gradually absorbed by the more numerous Slavs. Their appearance and even their language changed, until only the name Bulgaria and a few customs, such as the love of meat and cheese, and the wearing of sheepskin coats and rawhide boots, serve to recall their steppe origin. Nevertheless, they have added certain valuable qualities to the present population. The virility, independence and tenacity of the present Bulgarians are gifts from their steppe ancestors. These qualities, added to the stolid patience and perseverance of the Slav, have resulted in a peasant population unequaled throughout the Balkans for its energy, ability and the tenacity with which it pursues national aims.

## POPULATION

Occupying a territory of 39,825 square miles, or approximately the same as that of the State of Ohio, Bulgaria has a population of some 6,000,000. This gives the country as a whole a population density of approximately 150 per square mile. Agriculture occupies the attention of 82 per cent of all the people, and it is consequently not surprising to find that 80 per cent of them are classified as rural. Sofiya (Sofia), whose population numbers 250,000, is the only city of over 100,000.

## SITUATION

Bulgaria stands astride the great route from Asia Minor to central and western Europe. Through it also passes the shortest route from



TABLE 133  
OCCUPATIONS OF THE WORKING POPULATION OF BULGARIA<sup>1</sup>

Occupation	Percentage of Total
Agriculture.....	82.0
Industry.....	7.9
Commerce and transportation.....	4.0
Mining.....	0.2
Professions.....	1.7
All others.....	4.2
Total.....	100.0

the Walachian steppes to the Ægean. It has thus felt the tread of countless invaders. Magyar and Avar, Celt and Slav, Greek and Bulgar, Turk and Russian, these and numerous others have crossed its fertile plains and conquered its mountain passes. Some have remained to add their contribution of blood and culture, while others have crossed quickly, leaving only burning villages and ravaged fields to tell of their passage. All, however, have added to the uncertainty and political instability of the region.

Although the situation was a disadvantage from a political point of view, it had certain economic advantages. Trade followed the paths of these migrating hordes or conquering armies, and today the country is crossed by the rail line carrying the Orient Express from Istanbul to western Europe. Crossing it also is the rail line connecting București with the Ægean at Thessalonikē. Bulgaria thus has good land connections with all portions of Europe, a fact which is likely to be of greater importance in the future as its economic life matures.

It also has commercial outlets on both the Danube and the Black Sea, the former providing contacts with Rumania and central Europe. Unfortunately, its Black Sea coast contains no good harbors. Nevertheless, every effort is being made to develop the ports of Varna and Burgas, especially since the loss of the nation's shore line on the Ægean.

## CLIMATE

The land to the north of the Balkans has a continental climate, with cold winters and hot summers. Here the rainfall varies from 24 to 25 inches annually, and results in a steppe type of vegetation. However, the fact that most of the rain comes during the summer makes this region well adapted for cereals. The valley of the Maritsa has a modified Mediterranean climate, due to its protection from the cold northern

<sup>1</sup> *Statistical Year Book of the League of Nations, 1931-32.*

winds. The rainfall varies from 22 to 27 inches, and is ample for most types of agriculture. In the highlands temperature varies with elevation and exposure, and the rainfall is greater than in the lowlands. These conditions favor the growth of forests of beech and oak, and Bulgaria ranks high among the European nations in the proportion of its area which is forested.

### GEOGRAPHICAL REGIONS

Bulgaria may be divided into three natural regions: (1) the Balkan foreland in the north, between the Balkan Mountains and the Danube; (2) the valleys of the Maritsa and the Tundža to the south of the mountains; and (3) the highlands, including the central Balkan range and the Rhodope Massif to the south and west.

### THE BALKAN FORELAND

To the north of the Balkans a broad, rolling plateau slopes gently to the Danube. It is drained by the Isker, Osmă, Lom, and other rivers, most of which flow through deep, narrow valleys and are of little value for irrigation and navigation. These valleys hamper east-west transportation, but carry the north and south routes connecting the Danube with Sofiya and the plains of Rumelia. Much of the plateau is covered with rich loessial soil, and it is one of the most fertile portions of Bulgaria.

**Agriculture.**—Tiny agricultural villages dot the valleys, and these contain the great majority of the population. In the past the need for defense compelled the peasants to group together in small towns, so that today individual farmsteads are almost unknown in Bulgaria. Each village has its common pasture, usually located on the poorest land, the rest of the land being chiefly devoted to the cultivation of cereals. Unlike the other Balkan States, Bulgaria is not faced with the problem of land tenure. Large estates are rare, most of the land being held by the peasants in holdings which average only 15 acres in extent. Unfortunately, these holdings usually consist of a number of widely separated fields, none of which may average more than one acre in size. The use of modern agricultural machinery is thus impossible. Hand cultivation predominates, and only the most primitive implements, such as the hoe and the wooden plow, are in common use. The government is making strenuous efforts to remedy this situation, and already some of the villages have redistributed their land so that the

peasants could consolidate their holdings, and larger fields would result.

Agriculture occupies a more important place in Bulgaria than in any other European state, 82 per cent of the population being engaged in this activity. Consequently, it is not surprising to find here a larger proportion of arable land than in any other Balkan country. Some 35 per cent of all the land is under cultivation, and 72 per cent of the cultivated land is planted in cereals. Wheat occupies the most land, and is followed in this respect by corn, barley, rye and oats.

The Balkan foreland is the great center of cereal production. The more moist land of the valleys is planted in corn, and the higher land is devoted to wheat, rye or barley. The grain surplus is not large, and little remains for export. The tiny farms are devoted to the production of food and clothing for the peasant proprietor. Practically everything that he uses, whether it be food, clothing or furniture, is produced at home or in the immediate neighborhood. The farms are usually so small that they are barely self-supporting. Consequently, if there is any marketable surplus, it consists of a few eggs, a little cheese or wool, a few chickens, a pig or two, and possibly a sack of grain.

TABLE 134  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN BULGARIA  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as noted)	
	1909-1913 <sup>a</sup>	1926-1930	1909-1913 <sup>a</sup>	1926-1930
Wheat.....	2,409	2,697	37,823	45,805
Corn.....	1,492	1,681	26,277	28,192
Barley.....	516	584	10,380	13,983
Rye.....	542	519	8,345	9,037
Oats.....	408	333	8,651	8,082
Potatoes.....	11	28	532	2,458
Tobacco.....	36	74	23,435 <sup>b</sup>	50,878 <sup>b</sup>
Grapevines.....	135 <sup>c</sup>	178	8,488 <sup>cd</sup>	51,128 <sup>d</sup>
Sugar beets.....	.....	44 <sup>e</sup>	.....	248 <sup>ef</sup>
Attar of roses.....	.....	15 <sup>e</sup>	.....	77 <sup>eo</sup>

<sup>a</sup> Present boundaries.

<sup>b</sup> Unit, pound.

<sup>c</sup> 1914.

<sup>d</sup> Unit, gallon of must.

<sup>e</sup> 1927-1930.

<sup>f</sup> Unit, metric ton.

<sup>o</sup> Unit, ounces.

Unlike their neighbors in Rumania and Yugoslavia, the Bulgarians consume wheat and rye rather than corn. Consequently, despite the large wheat acreage, little is exported, the value of the corn exported being over three times that of the wheat.

Considerable attention is devoted to the raising of livestock. Nearly every family has several chickens, a few sheep and swine, and a cow or two, and the more well-to-do have a horse. The more rugged areas are devoted to the grazing of sheep, goats and cattle. Bulgaria has more sheep than any other Balkan state, and ranks high in the number of cattle and swine.

TABLE 135  
LIVESTOCK IN BULGARIA, GREECE AND YUGOSLAVIA, 1930<sup>1</sup>  
(in thousands)

Country	Horses	Asses and Mules	Cattle	Sheep	Goats	Swine
Bulgaria <sup>a</sup> .....	482	212	1,817	8,740	1,261	1,002
Greece.....	317	497	837	6,799	4,637	335
Yugoslavia.....	1,161	123	3,812	7,953	1,731	2,924

<sup>a</sup> 1927.

As one passes eastward across the Balkan foreland and approaches the Black Sea, the climate becomes more moderate. Here cereals are less important, and a larger proportion of the land is devoted to tobacco and the vine.

**Ports.**—Much of the trade of the plateau passes through the Danube ports. The Bulgarian bank of the river is high and well drained, in contrast to the low, swampy Rumanian shore. This favored easy contacts with the river, and the erection of ports on Bulgarian territory. The river here is wide, and navigable for boats drawing 7 feet, while it is closed by ice for an average of 39 days each year. As a consequence, it carries the major part of the trade of the nation. Ruse (Ruschuk) is the most active port, as it receives more than one-half of the country's imports, and through it passes most of the grain destined for foreign markets.

The Black Sea coast is stormy and contains no really good harbors. Varna was formerly an important grain-shipping port, but, despite the strenuous efforts of the Bulgarian government, it has declined since the grain fields of the Dobrogea passed into the hands of Rumania. As

<sup>1</sup> *Statistical Year Book of the League of Nations, 1931-32.*

a harbor it leaves much to be desired, for it offers little protection from the storms of the Black Sea, and is frequently closed by ice for short periods each year. Recently, however, this city has developed into the leading shore resort for Bulgaria and neighboring countries, and thus profits considerably from the recreational industry. To the south the port of Burgas is handicapped by having only an open roadstead as a harbor, but it has an advantage over Varna in being better protected from storms and in being ice free.

#### THE SOUTHERN VALLEYS

Directly to the south of the Balkans lies a narrow valley drained by the Tundža and separated from the plains of the Maritsa by a narrow ridge known as the Karaja Dagħ or Anti-Balkans. This valley is known as the "Vale of Kazanlik" or sometimes as "The Rose Valley." Here an old Turkish merchant, seeing the wild roses which gave their name to "Shipka" or "Wild Rose" Pass, induced the peasants to plant roses for the extraction of attar of roses. Today nearly the entire valley is planted in this flower. Its 15,000 acres of rose fields present a most beautiful sight during the period of bloom. From their fragrant petals is distilled that precious base for many perfumes, known as attar of roses. Some 200 pounds of petals are required to yield one ounce of this essence, which is normally worth considerably more than its weight in gold. Today the Vale of Kazanlik supplies three-fourths of the world's attar of roses.

The fertile soils of the Maritsa Valley, or, as it is frequently called, the Vale of Plovdiv (Philippopolis), are planted in wheat, corn, tobacco, sunflowers and mulberry trees, and the bordering slopes are devoted to tree fruits and the vine. Plovdiv is the center of tobacco raising, an activity which has increased so rapidly that today tobacco provides nearly 50 per cent of the value of all the nation's exports.

The city of Plovdiv lies near the center of this valley, and is rapidly increasing in both size and importance. It competes with Sofiya for the cultural leadership of the country, and is the commercial center of this productive agricultural region. Situated on the rail line from Istanbul to western Europe, it has excellent commercial contacts. Since the war it has been somewhat handicapped by being cut off from the Ægean. However, negotiations are now under way to carry out the provisions of the peace treaties, and provide Bulgaria with a free outlet at Alexandroupolis (Dede Agach) or some neighboring port.

## THE BULGARIAN HIGHLANDS

The Balkans, which are a continuation of the Carpathians, are only some 18 miles in width, and rise to an elevation of from 5000 to 6000 feet. Numerous passes exist which link the Balkan foreland with the southern valleys. Railways cross those cut by the rivers Isker and Yantra. The railway following the Isker crosses the mountains at



A scene in the Rhodope Plateau, Bulgaria. (Courtesy of the Commercial Museum, Philadelphia, Pa.)

Trajan's Gate, and meets the Niš-Istanbul line at Sofiya, Bulgaria's capital. This city was founded by Trajan, and just missed becoming Constantinople, for Constantine seriously considered making it his capital. Although cereals, tobacco and fruit are raised in the neighborhood, the city is more important for its commerce and industry than as an agricultural center. Its situation at the junction of trade routes adds to its commercial importance. Its location near the lignite fields of Pernik gives it ample fuel, and it contains factories representing nearly all the industries of the kingdom. The city has recently grown rapidly, and is becoming an active, progressive capital.

The upper slopes of the Balkans either are forested in beech and oak, or are grass-covered pasture lands. Hundreds of thousands of

sheep and goats are grazed on these grasslands, and swine feed on the mast of the forests. The northern-facing basins and valleys are largely devoted to grazing, while those facing the south contain attractive orchards, vineyards, and tobacco fields. Coal and lignite, which constitute the principal minerals of Bulgaria, are located in these highlands. About 1,500,000 tons of lignite are mined annually, and are taken chiefly from the Pernik deposits near Sofiya. The small fields of anthracite and large fields of bituminous are almost unworked at present, but in the future they should add materially to the wealth of the country. The nation is poor in other mineral wealth, only small deposits of lead, zinc and bauxite being known. The streams flowing down the Balkan slopes turn the wheels of many little mills, and provide the most used source of power in the country. The streams of Bulgaria have a potential power capacity estimated at 1,200,000 horsepower, only approximately 50,000 of which have been developed at the present time.

The Rhodope Massif is the wildest and most isolated portion of the country. Its steep cliffs and deep gorge-like valleys hamper transportation, and many of its people have very little contact with the outside world. The crystalline crests are usually bare or grass covered, and the sedimentary slopes are forested. The valleys are planted in cereals and tobacco, and livestock are grazed on the upper pastures.

Many interesting human types are found in these highlands. The most numerous of these are the Pomaks, or Moslem Bulgars, whose Mongol-type log huts show that they have preserved their steppe characteristics to a greater extent than the people of the plains. Ignorance and poverty characterize these people, and their mode of living is extremely primitive. However, conditions are changing. The government is breaking down this isolation by constructing roads into the highlands, and already the evergreen forests, clear mountain lakes, and towering cliffs have made the southern part of the Rhodope the outdoor playground of Bulgaria.

## INDUSTRY

Domestic handicraft is the only type of manufacturing widely practiced in Bulgaria. Nearly every peasant family prepares its own homespun cloth and makes most of its furniture and other household equipment. Factories are rare, and those which exist are for the most part small. The preparation of foodstuffs, timber products, pottery and textiles are the leading industries in the order named. Small flour mills

and distilleries are located at frequent intervals in the agricultural districts, and sawmills and tanneries are located along the torrents of the Balkan and Rhodope slopes. Gabrovo is the textile center of the nation, and derives much of its wool from the sheep pastured on the surrounding slopes. Plovdiv manufactures large numbers of cigarettes, as well as producing some silk and cotton fabrics. Sofiya includes within its boundaries examples of nearly every type of manufacturing to be found throughout the nation.

#### FOREIGN TRADE

The economic self-sufficiency and backwardness of Bulgaria is shown by the fact that it has the lowest per capita foreign trade of any European nation except Russia. Its exports are almost entirely agricultural products, with tobacco, eggs, corn, attar of roses, wheat and lambskins being the leading items. Germany is by far the most important market for these products, and is followed in importance by Italy, Czechoslovakia and the United Kingdom. Imports consist largely of manufactured products, with textiles, metals, machinery and chemicals as the most important. These are drawn from the same group of nations which serve as the leading markets for Bulgarian exports.

#### TURKEY IN EUROPE (TÜRKIYE CÜMHURİYETİ)

Turkey has lost almost all of its once vast European domain. It has retained only that section of eastern Thrace lying between the Black Sea and the Maritsa River, a region with a total area of slightly less than 10,000 square miles. Even in this small territory its powers are limited by a demilitarized zone which extends along the Greek and Bulgarian frontiers and along the shores of the Bosphorus and the Dardanelles. This provision with regard to the straits is, however, of little importance, for their natural defenses are so strong that they can quickly be rendered impassable by mine fields and mobile artillery.

European Turkey consists of an undulating plain bordered to the north and south by low mountains. The rainfall is so light that the vegetation is of a steppe type. Grazing is almost the sole occupation on the upper slopes, while the fertile soils of the well watered valleys are devoted to mulberry groves, vineyards, and fields of tobacco, rice, cotton, poppies, and madder. Silk is, however, the principal agricultural product. The lack of mineral and forest resources and the backward eco-



conomic development of the area cause agriculture to be almost the sole economic activity.

The location of European Turkey has always made it of considerable commercial and strategic importance. Here the overland routes from Western Europe to the Near and the Far East cross the water route from the Black Sea to the Mediterranean. At the time when most of the trade with the east moved by land, such cities as Edirne (Adrianople) and Istanbul were thriving commercial centers. The former is located where the Tundža and the Arda join the Maritsa. Below this the river is navigable for small boats. It was formerly a thriving commercial metropolis, but the change of boundaries and the diversion of traffic into other channels have reduced it to a mere shadow of its former importance. It is, however, a site of great sentimental importance to the Turks, for it was once their capital, and here lie buried some of their greatest sultans.

**Istanbul.**—Few cities have played a more important part in world affairs than has Istanbul, and none has had a history more filled with tragedy, romance and adventure. Controlling the entrance to the Black Sea and the land bridge between Europe and Asia Minor, its location has been of tremendous strategic and commercial importance. Coveted by every great conqueror, it has known the thunder of a hundred invading armies. Into its marts flowed the treasures of the east and the more practical products of the west. Situated on the shores of the Golden Horn, the only good harbor on the European side of the Bosphorus, it developed into a great port. However, time brought many changes. The opening of the water routes to the east caused its commercial importance to decline. Nevertheless, it is still an important *entrepôt* port, and through it pass many of the imports entering Turkey. With the development of the southern part of European Russia, its strategic importance has increased, as is evidenced by the many attempts of Russia to gain possession of this important gateway. Today the Turks are more firmly in control than they have been for generations. Its economic future seems uncertain, but the glamour of its past will always make it one of the world's most notable cities.

## GREECE (ELLAS)

Greece differs from the other Balkan States in its past cultural development and the breadth of its influence. No people have ever surpassed the cultural attainments of the Greeks. In the brief period of a century, from 530 to 430 B.C., the little city of Athēnai produced

twelve men of outstanding genius whose accomplishments have had a profound influence upon the life of the civilized world. Yet Greek culture flowered for but a short time, and then withered and declined. Thus the geographer is presented with the interesting and important problem of determining the extent to which the physical environment influenced the rapid rise and equally rapid decay of Greek civilization.

### POPULATION

The earliest Greeks were short, dark and long-headed. Later came round-headed invaders from the steppes, and this group seem to have dominated during the period of greatest accomplishment. They brought with them strength and vitality from their grassland homes. Plunged into the mellow climate of the *Ægean*, they were enabled to build up a surplus, and achieve leisure. Thus they were free to turn their attention to cultural advance and political and commercial expansion. But the climate lacked stimulation, and the actinic rays of the summer sun seem to have been injurious. Upon this group also fell the burden of war, and malaria proved especially deadly to many. Consequently, their numbers were reduced, and those who remained possessed a lessened vitality. They were accordingly unable to maintain their high standards, and fell an easy prey to such later invaders as the Slavs and numerous groups from the Levant. These invaders decidedly modified the population from a physical point of view, and the tall, round-headed type so typical of classical Greece nearly disappeared. All the newcomers, however, were absorbed culturally, and frequently went out to spread Hellenic culture in other lands.

In 1930 the population of Greece was estimated at 6,394,000, or slightly less than that of the State of Ohio. The average density is thus 127.2 per square mile. Since the classical period the greatest density has occurred in the southwestern and northeastern parts of the peninsula. Recently, however, there has been a movement of population toward the east, due to the more abundant grain lands to be found in that area. The cultural and economic standards of the present population are not high, although there has been some improvement in this respect within recent years. Illiteracy is quite widespread, and there is little to remind one of the magnificent attainments of the classical period. Some three-fifths of the Greeks are engaged in agriculture, but a larger proportion are engaged in commerce than in any other Balkan state. As is to be expected in a country which is primarily agricultural, the population is predominantly rural. Only 33 per cent of the people

reside in towns and cities of over 5000, and the nation contains only three cities with a population of over 100,000.

A serious population problem has been created by the provision of the treaties which terminated the disastrous war with Turkey in 1922. In these treaties Greece entered into an agreement with Turkey and Bulgaria for an exchange of nationals. As a result, 1,400,000 Greeks from Asia Minor and Bulgarian Macedonia were returned to Greece, while 480,000 Turks and 200,000 Bulgarians were sent to their respective countries. The influx of such a large group, many of whom could not speak Greek, caused much suffering, and the adjustments required before they could find homes were difficult and costly. Many of them have settled throughout Macedonia, and have served to give that section a more homogeneous population than ever before.

### SITUATION

It is not surprising that the Greeks were the first people of continental Europe to develop a high culture and a modern civilization. They were situated nearest to the ancient civilizations of Egypt, Mesopotamia and Krêtê (Crete), and numerous islands and narrow waterways facilitated contacts with these older lands. From these regions the Greeks drew many cultural contributions which provided the foundations upon which Greek civilization was built.

Once the Greeks had developed a high culture, they were so located that they could easily spread it throughout the Mediterranean. Situated where such subordinate seas as the Adriatic, Ionian, Black and Ægean converge upon the Mediterranean proper, their peninsula naturally became a great trade center. Thus their cultural, commercial and military contacts with all portions of the Mediterranean Basin were facilitated, and Hellenic trade and Hellenic culture spread throughout the territories which bounded their neighboring seas.

### GEOGRAPHICAL DIVISIONS

Greece is a mountainous land, with isolated valleys and a narrow and interrupted coastal plain. Submergence has caused it to be cut up into a number of peninsulas, and is responsible for the large number of islands lying off its coast. Although it has an area of slightly over 50,000 square miles, no part of its territory is more than 85 miles from salt water. Its lands are thus largely insular and peninsular, and its population and civilization are essentially coastal.

## MACEDONIA AND WESTERN THRACE

Macedonia and western Thrace consist for the most part of the lower Vardar Valley, together with the southern portion of the Rhodope Massif and its bordering plains. Macedonia lies at the meeting place of Bulgaria, Greece and Yugoslavia, while in Thrace, Bulgaria, Greece and Turkey join. Both regions have been transition zones in position and population. They contain the Ægean outlets of Bulgaria and Yugoslavia, and mark the historic line of Greek advance to the Bosphorus as well as the line of Turkish advance into Greece and Albania. The population is a confused mixture of all of these people, and this, combined with the fact that this is a region where national interests clash, has made it one of the most disturbed and poorly governed portions of Europe.

**Eastern Macedonia and Western Thrace.**—The mixed population of eastern Macedonia and western Thrace consists largely of backward peasants who have been isolated from the more advanced sections of the country. Malarial estuaries and flood plains are common, and the lakes of the Struma Valley hamper east and west communication. Nevertheless, this region contains fertile plains devoted to tobacco, cotton, opium, rice and other cereals. Reclamation projects can materially increase the amount of arable land, and improve health conditions.

Kavalla and Alexandroupolis are the principal ports of this region. The former has the best harbor, but the latter has the greatest possibilities for future development, for it lies near the mouth of the Maritsa, which forms the natural outlet for most of Bulgaria and Thrace. Negotiations are under way between Greece and Bulgaria for the establishment of an outlet for Bulgaria in this region.

**The Vardar Depression.**—The Vardar depression occupies the western part of Greek Macedonia, and separates the Pindus from the Rhodope highlands. This valley, together with the Morava, forms the shortest and most convenient route from western and central Europe to the Ægean. It is of special interest to Yugoslavia, Hungary, eastern Albania and western Bulgaria, as it forms the logical outlet from these regions to the sea. Already the rail line from Niš to Thessalonikē is being increasingly used. The rapid growth of Thessalonikē has made it the third largest city of Greece, and it seems destined to become one of the great commercial centers of the Mediterranean Basin.

The plains of Thessalonikē rival those of Thessaly in size, but are less efficiently used. In the past they have produced tobacco and silk, and a portion of the land has been devoted to the production of cotton and opium. They have a more continental climate than most sections of the Greek Peninsula, and are well suited for the raising of cereals. The settlement of large numbers of refugees in this area has made necessary reclamation works which involve the restoration of some 800 square miles which formerly were useless.



A portion of the plains of Thessalonikē, showing the American Farm School. (Courtesy of the American Farm School.)

#### THE GREEK PENINSULA

**The Highlands.**—The Greek Peninsula consists of a southern extension of the Pindus ranges, a region of unforested mountains which is only suitable for a sparse and pastoral population. Here centuries of deforestation have resulted in a shortage of timber and in extensive soil erosion. The population of the highlands is almost entirely pastoral, and transhumance is a feature of the human development in many sections. Large flocks of sheep and goats are grazed on the grasses and scrub growth of the slopes. The goats are raised principally for their milk, which is used instead of cows' milk by a large portion of the population. So important is this animal that Greece contains more goats than any other nation in Europe, and has the densest goat population of any country in the world. Occasional mountain basins provide sufficient level land for cultivation, but isolation and the backwardness of the peasants limit their use. The peasants are for the most

part liberty-loving mountaineers, extremely picturesque as to dress, but backward economically and culturally.

**The Coastal Regions.**—Although sinking has submerged most of the lower river valleys and the coastal plains, disconnected areas of level land border the east and west coasts and the shores of the numerous gulfs and seas. These plains are the agricultural centers of the peninsula, and contain all the important cities. However, the mountainous peninsulas isolate these favored areas, and were responsible for the establishment in each of a separate political unit. Thus in each plain arose a city which incorporated the surrounding lands into a city-state. Athēnai (Athens) arose on Attica, Sparta on the plains of Laconia, and Thebes in the Bœotian plain, and numerous other plains supported minor cities. The physical differences between these plains were sufficient to favor economic, political and cultural individualism, while the contacts between them were so difficult as to retard unity. Accordingly, there has until recently been no Greek history, but only the history of separate Greek states; and even today political unity is hindered by the physical complexity of the nation.

**Maritime Activities.**—The environment was such as to turn the attention of these coastal dwellers to the sea. The protected gulfs and bays, and the numerous offshore islands provided ideal training grounds for the early navigator. Mountain barriers hampered land communications between the plains, so that if any important intercourse was to take place, it must of necessity be by sea. The plains were also limited in extent, and as the population grew they were no longer sufficient to supply food. Thus their inhabitants had either to emigrate or to draw food from other lands, and in either case maritime contacts were essential. Consequently, it is not surprising that the Greeks became one of the leading maritime peoples of the ancient world, and that today they are noted as traders and mariners.

**Agriculture.**—In spite of the fact that the Greeks have achieved their greatest success in commercial activities, the majority of them depend upon cultivation and pastoral activities for their livelihood. It is within these bordering plains of the peninsula that for the past 2000 years Greek peasants have raised cereals and cultivated the vine and the olive. Not all of these plains are cultivated. Sediment carried by the streams has frequently choked their lower channels and changed productive fields into malarial swamps. Political unrest and frequent warfare have in the past caused many of the peasants to withdraw to the mountains and leave the level areas to the mercies of the passing armies. Today only 15.4 per cent of the area of the country is classified

as arable land, although this percentage is being gradually increased by drainage and other types of reclamation.

TABLE 136  
ACREAGE AND YIELD OF PRINCIPAL CROPS IN GREECE  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Yield (thousands of units— bushels, except as noted)	
	1926-1930	1931	1926-1930	1931
Wheat.....	1,283	1,390	12,388	12,199
Corn.....	487	528	6,248	5,371
Barley.....	471	557	7,013	9,147
Oats.....	284	341	5,005	6,477
Rye.....	132	179	1,609	1,815
Currants and raisins....	160	179	338,768 <sup>a</sup>	345,633 <sup>a</sup>
Grapevines.....	312	356	60,110 <sup>b</sup>	42,902 <sup>b</sup>
Olive oil.....	...	...	22,936 <sup>c</sup>	28,882 <sup>c</sup>
Tobacco.....	181	183	141,679 <sup>a</sup>	93,099 <sup>a</sup>

<sup>a</sup> Unit, pound.

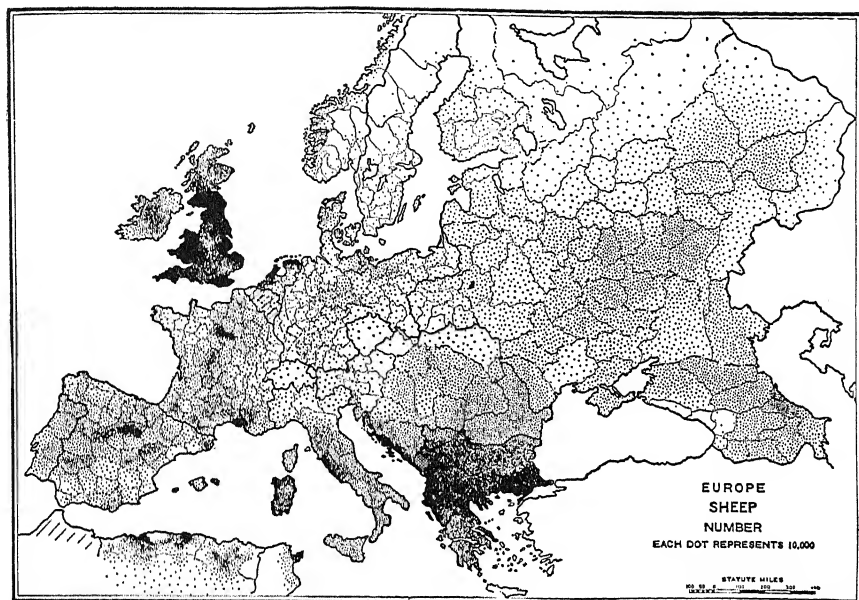
<sup>b</sup> Unit, gallon of wine.

<sup>c</sup> Unit, gallon of olive oil.

In the plains to the west, such Mediterranean crops as the olive, currants, raisins, and citrus fruits are raised in considerable quantities. Some grain is raised, but in amounts insufficient to meet the needs of the population. In the south the hot, dry summers lead to the growth of such drought-resisting crops as the olive, and to the production of winter grains. Cotton and silk are raised in limited amounts, and in 1930 Greece ranked second among the European states in the production of both of these commodities. The more continental climate of the east, with its hot summers and cold winters, causes a change in the type of agriculture. Wheat, barley, corn and tobacco are grown on the plains, and cattle and sheep are grazed on the lower slopes. In this section occurs the plain of Thessaly, the largest area of level land in the peninsula. This is the center of cereal production, and the most important agricultural region in Greece. Unfortunately, however, the nation is unable to produce enough food to supply its own needs, and must import large amounts each year. Nevertheless, agricultural products make up most of the exports. Tobacco constitutes more than half of the total value of all exports, and is followed in importance by currants, raisins, wine, olives, olive oil, figs, and other fruits.

The amount produced for export and for domestic consumption is

far less than it might be. Due to backward agricultural methods, the yield per acre is extremely low. There is little use of fertilizers, and the average Greek peasant has but slight knowledge of scientific cultivation. Furthermore, in the larger plains much of the best land is held in large estates and farmed by the peasants on shares. Under this system slovenly methods exist, and little attention is given to the preservation of the fertility of the soil.



Sheep are most numerous in the Balkan Peninsula and the British Isles. In the former they are raised principally for wool, while in the latter meat is the most important product. (U. S. Department of Agriculture.)

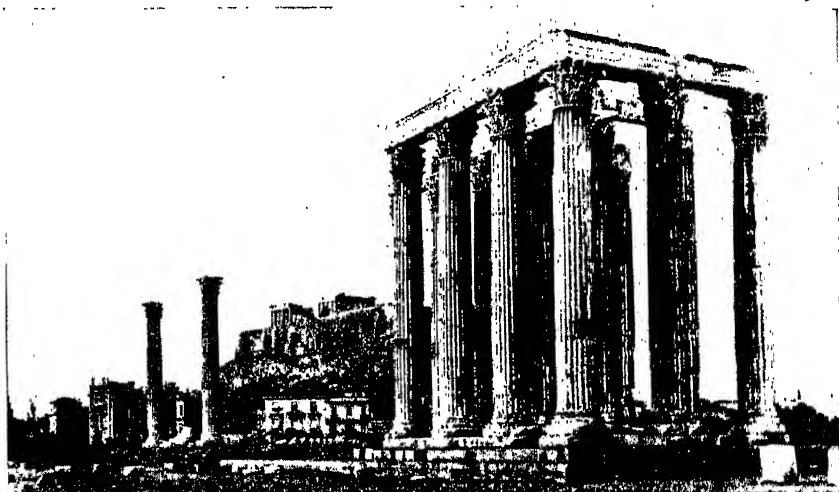
#### ATHĒNAI

How surprising to find the city which has given to the world so much that is finest in cultural life located in the midst of a tiny, parched plain. However, it has decided advantages in both site and situation. Across the plain run two small but perennial rivers, the Cephessus and the Ilissus. These water the gardens and fruit groves, and the winter rains permit the growth of a limited amount of grain. Numerous springs also occur where the surface limestone joins the underlying impermeable schists. In the midst of the plain a resistant mass of limestone rises abruptly some 500 feet above the general surface. This is known as the Acropolis, or Athena's Rock, and afforded



an admirable site for a citadel to which the cultivators of the plain could flee for safety in case of attack. Here was the site of the first settlement, and from it Athênai spread to the adjacent hills and the bordering plains. This rock was first occupied by a stronghold and later by the king's residence. However, as cultural life developed it was occupied by the Parthenon, and became the spiritual stronghold of the state.

As the population of the city grew, the meager acres of the Athenian plain could no longer provide the needed food, and it became necessary to develop trade. Here the advantages of situation became evident.

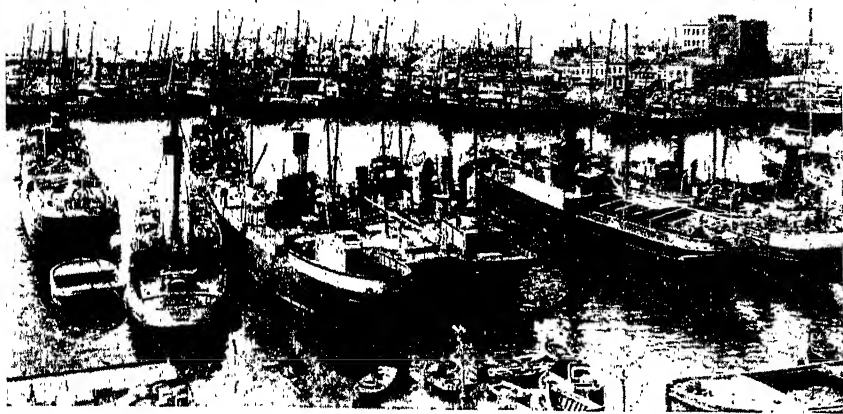


Athênai: the Columns of Zeus with the Acropolis in the background. (Courtesy of the Greek Legation, Washington, D. C.)

The protected waters of the Saronic Gulf and its numerous islands were an invitation to the navigator, and sea routes radiated in all directions. The Gulf of Corinth, which nearly severs the Peloponnesus from the rest of Greece, leads to the west, and provides contacts with the Mediterranean and the Adriatic. Even during the early Greek period the narrow Isthmus of Corinth (less than four miles wide) offered no serious handicap to trade. The Greeks dragged boats across over a prepared track, and navigators preferred this route to risking the dangers of rounding the Peloponnesus. Today the Isthmus is pierced by a ship canal, which provides direct water communication with the west. Other routes lead to the south and east. The Cyclades formed stepping-stones leading to Asia Minor and to Krêtê, and Rodi (Rhodes). The islands of the Ægean served a similar function in

promoting trade with the Black Sea and with Macedonia and Thrace. Thus Peiraievs, the port of Athens, soon became busy, and Athēnai became the great commercial and colonizing city of the Ægean.

Athēnai stagnated during Turkish occupation, but has grown rapidly since the establishment of Grecian independence. Its population of approximately 500,000 places it first in size among the cities of the nation. In part, it is a busy modern city, with up-to-date office buildings and slums. The reconstructed Parthenon still stands out boldly against



The port of Peiraievs. (Courtesy of the Commercial Museum, Philadelphia, Pa.)

the Attic sky, and, although many of the present Greeks who live within its shadow know little of its significance or history, it continues to personify "the glory that was Greece."

Peiraievs is still a busy port. Not only does it handle the sea-borne commerce of Athēnai, but it has become the leading *entrepôt* port of the Ægean. Its commercial importance has increased until it is the second largest city of Greece.

#### THE GREEK ISLANDS

The Greek Peninsula is bordered on all sides by a large number of islands. To the west lie the Ionic Islands, while in the Ægean some

300 islands are under the Greek flag. All of these are the tops of partly submerged highlands, and are consequently rocky and poorly suited for cultivation. Small settlements occur wherever areas of level land exist, and most of the inhabitants depend upon both the sea and the land for their livelihood. These islands have assisted materially in the maritime development of Greece. During the early period of navigation, they permitted the navigator to journey to Asia Minor and neighboring European shores without ever being out of sight of land or far from a protected harbor. Today some serve as coaling stations, while others, such as Corfu and Krêtê, are of major strategic importance.

Krêtê is the largest and most important of the Greek islands. This was the site of an early civilization which must have arisen not much later than that of Egypt, and which was the first advanced civilization of Europe. From its great capital of Cnossus, Krêtê spread its culture throughout the Ægean and neighboring seas, and Greek civilization borrowed much from this island kingdom. Today Krêtê supports a moderate population on its narrow coastal plains, and is of great strategic importance because it controls the entrance to the Ægean.

### THE TOURIST INDUSTRY

Its numerous historic and artistic ruins and its Mediterranean beauty make Greece unusually attractive to the tourist, and give it a valuable economic asset. The Parthenon, the Temple of Zeus, the Temple of Poseidon, and numerous similar gems stir the heart of any lover of architectural beauty. Many other ruins are rapidly being excavated and reconstructed. And what student of history does not wish to worship once at Marathon, or Thermopylæ, or Salamis, or along the Eurotas, where once stood mighty Sparta? No land is richer in artistic and historic monuments; yet until recently little was done to exploit this advantage, and even today Greece has fewer visitors than many nations less well endowed with historic interest. Better roads and railroads, improved hotels and more advertising should result in a decided increase in the number of tourists and a consequent rise in the national income.

### MINERALS

The Greek Peninsula and the neighboring islands contain a considerable variety of mineral wealth. The marble of Pentelikon and the lead-silver ore of Attica have been mined for centuries. Deposits of

iron ore occur in Attica, Eubœa and Seriphos, but are not mined to any considerable extent, due to the absence of any fuel except low-grade lignite. The emery of Naxos, the chrome of Phersala and the magnesite of Eubœa are mined at the present time. Most of the ore produced is exported because of the lack of home industries.

### MANUFACTURING

Greece has a much larger proportion of its population engaged in industry than any other Balkan state, but, compared with the western European nations, this activity is of slight importance. The greatest handicaps to its development have been the lack of power resources, and political unrest. Although industrial activity has been increasing and probably will continue to increase, it seems likely that the first of these handicaps will prevent Greece from becoming a highly industrialized state.

The leading industries are those concerned with the preparation of food products. Of these, flour milling and the preparation of olive oil are the most important. Such industries are located near the sources of raw materials. The manufacture of textiles, cigarettes, machinery, chemicals and leather follows foods in importance.

### TRANSPORTATION

Like the other states of the Balkan Peninsula, Greece is poorly equipped with transportation facilities. It has a smaller railway mileage per 1000 inhabitants than any other nation in Europe, and it also ranks near the bottom in mileage per 1000 square miles of territory. Likewise, its system of highways is inadequate and poorly developed. Traditionally, however, the sea has been the principal highway of the Greeks, and today Greece ranks among the leading nations of the world in merchant tonnage per capita.

### FOREIGN TRADE

Greece has long been a commercial nation of considerable importance. Its per capita foreign trade far exceeds that of any other Balkan state, and is approximately equal to that of Italy. Its exports consist largely of agricultural products, with tobacco, currants, wine, raisins, and hides and skins being the most important items. Small amounts of emery and lead-silver ore are also exported. Germany, the

United States, Italy and the United Kingdom are the principal markets for these exports. Foods constitute the most important group of imports, and are closely followed by manufactured products. Wheat, iron and steel, machinery, cotton piece goods, and chemicals are the leading individual items. These come chiefly from the United States, the United Kingdom, Germany and France.

## BIBLIOGRAPHY

### BULGARIA

- Buchan, J. (ed.), *Bulgaria and Rumania*, Houghton Mifflin Company, New York, 1924.  
 Lamouche, L., "Bulgaria Since the War," *Living Age*, 1932, vol. 318, pp. 157-158.  
 Pasvolsky, L., *Bulgaria's Economic Position*, The Brookings Institution, Washington, 1930.

### EUROPEAN TURKEY

- Ellison, G., *Turkey To-day*, Hutchinson & Co., London, 1929.  
 Howard, H. N., *The Partition of Turkey, 1913-1923*, Oklahoma University Press, Tulsa, 1931.  
 Mears, E. G., *Modern Turkey*, The Macmillan Company, New York, 1925.  
 Pears, E., *Turkey and its Peoples*, Methuen & Co., Ltd., London, 1912.  
 Ravndal, G. B., "A Commercial and Industrial Handbook of Turkey," *Trade Promotion Series No. 28*, U. S. Department of Commerce, Washington, 1925.  
 Semple, E. C., "The Regional Geography of Turkey," *Geographical Review*, 1921, vol. 11, pp. 338-350.  
 Stotz, C. L., "Life in Communities Along the Bosphorus," *Journal of Geography*, 1932, vol. 31, pp. 181-192.  
 Young, G., *Constantinople*, Methuen & Co., Ltd., London, 1926.

### GREECE

- Ancel, J., *La Macédoine: Son évolution contemporaine*, Librairie Delagrave, Paris, 1930.  
 Boyazoglu, A. J., *Contribution à l'étude de l'économie rural de la Grèce d'après guerre*, Berger-Levrault, Paris, 1931.  
 Eddy, C. B., *Greece and the Greek Refugees*, Allen & Unwin, London, 1931.  
 Gomme, A. W., "The Scenery of Greece," *The Geographical Journal*, 1921, vol. 57, pp. 418-431.  
 Mariolopoulos, E. G., *Étude sur le climat de la Grèce: Précipitation, stabilité du climat depuis les temps historiques*, Les Presses Universitaires de France, Paris, 1925.

- Mavrogordato, J., *Modern Greece, 1800-1931*, Macmillan & Co., Ltd., London, 1931.
- Mears, E. G., *Greece Today: The Aftermath of the Refugee Impact*, Stanford University Press, Palo Alto, 1929.
- Miller, W., "Greece and Her Neighbors," *Foreign Affairs* (London), 1931, vol. 9, pp. 487-495.
- Morgenthau, H., *I Was Sent to Athens*, Doubleday, Doran & Co., Inc., New York, 1929.
- Myres, J. L., "The Dodecanese," *The Geographical Journal*, 1920, vol. 56, pp. 329-346, and 425-446.
- Ogilvie, A. G., "A Contribution to the Geography of Macedonia," *The Geographical Journal*, 1920, vol. 55, pp. 1-34.
- "Physiography and Settlement in Southern Macedonia," *Geographical Review*, 1921, vol. 11, pp. 172-197.
- Pallis, A. A., "The Greek Census of 1928," *The Geographical Journal*, 1929, vol. 73, pp. 243-248.

## THE ITALIAN PENINSULA (ITALIA)

IF YOU can picture a population of over 41,000,000 poured into a region somewhat smaller than the State of New Mexico, you will begin to have some conception of the major problem confronting modern Italy. The solution of the problem is made more difficult by the grudging manner in which nature has endowed the peninsula with arable land and other natural resources. Every effort of recent Italian governments to increase agricultural production and expand industry has been designed to provide employment for and raise the standards of the dense and rapidly expanding population. Recent frantic efforts to establish a colonial empire have had a similar aim. Up to the present, these various efforts have failed, and as a result a continuous stream of Italians has moved to foreign lands in search of greater opportunities. Italy thus has a larger emigration than any other European country.

## HISTORY

Italy's attempts at expansion have also been efforts to recover something of the position and importance that were Roma's, for the peninsula has had a glorious history. Under the Roman Republic and Empire it controlled the entire Mediterranean world, and made many contributions in the fields of government, science, literature and art which have had a profound influence over all mankind. These past glories and the traditions of world mastery to which they gave rise have exerted a tremendous influence upon every succeeding generation.

Italy as a unified nation is new. Following the barbarian invasions, the Roman Empire crumbled, and the peninsula reverted to its pre-Roman status of being divided into a number of city-states. This result was natural, for differences in relief and climate have divided the peninsula into a number of distinct regions, which quickly fell apart once the strong centralized control of Roma disappeared. Some of these city-states achieved positions of great influence during the Middle Ages. The peninsula thus regained much of its former im-

portance, and became the cultural and artistic center of the Mediterranean world.

The period of renewed activity continued until the Turks cut the trade routes with the east and the Portuguese developed commerce with India by way of the Cape of Good Hope. In the years that followed, the Italian cities declined in importance and prosperity, and the lack of unity made the peninsula the prey of conflicting interests which led to constant unrest and lack of stability. Thus, when numerous other European nations were unifying internally and expanding colonially, the Italian peninsula was divided politically, and had no opportunity to acquire colonies.

In spite of this sad state, an impulse toward unity was making itself felt. Taking advantage of this, Victor Emmanuel, the new king of Sardegnna (Sardinia), and Garibaldi carried on a series of campaigns, and, between 1860 and 1870, they overthrew the foreign rulers and brought the entire peninsula and the adjoining islands under their control. Thus was the modern Kingdom of Italy born, and unity and independence achieved for the first time since the fall of the Roman Empire.

Nevertheless, Italy was far from recovering its former importance. Internal differences handicapped the new state, and weakened its influence. Likewise, the shift of trade from the Mediterranean to the Atlantic left the peninsula on the margin of the European world and greatly decreased its commercial importance. At the same time, the pressure of population was becoming more acute, and the government began a search for colonies to provide homes for its surplus millions. Unfortunately the best lands were already appropriated, and those which Italy was able to secure were unsuitable as homes for its people. Somaliland, Eritrea and Libya are largely unsuitable for Europeans, while Rodi (Rhodes) and the Dodecanese Islands are already crowded to capacity. Italy had hoped to gain important territories as a result of her part in the World War, but unfortunately her acquisitions were small, consisting largely of territories gained at the expense of Austria around the head of the Adriatic and in the Tyrol. The chief advantages derived from these additions were strategic, and they had the disadvantage of incorporating within Italy some 250,000 Germans and thus creating a minority problem.

#### POPULATION

Roma, as the capital of the Mediterranean world, drew peoples toward it from every corner of its far-flung empire. Later the barbarian



invasions added new population elements and new cultures. During the mediæval period, the commercial activity of the Italian cities attracted to them men of every race and every nation. Thus throughout its history Italy has been subjected to frequent invasions of alien peoples and alien cultures. These peoples she has absorbed culturally, and frequently assimilated racially. Nevertheless, the great majority added some valuable physical or cultural contributions, and played a part in determining the characteristics of the present population.

**Characteristics.**—Considering the abundance of these contributions from the outside, the racial and cultural uniformity of the present population is surprising. South of the Po Basin almost all of the people are members of the long-headed Mediterranean race. They are vivacious and impulsive, with a passion for music and play, but with little inclination to sustained effort. Nevertheless, they are capable of great self-sacrifice and effort when inspired, and have shown the capacity to produce and follow great leaders. In the Po Basin the Celtic or central European round-heads are found in large numbers. They are taller than the southern Italians, and are more energetic, persevering and tenacious. This group has produced many of the political and economic leaders of modern Italy. While the population may be divided into these two major groups, there are considerable differences between the peoples of the various provinces. These differences are evident in the dress, dialect and viewpoint, and are due, at least in part, to the isolation imposed by relief and to differences in climate. But whatever their cause, they have resulted in a degree of provincial patriotism sufficiently great to hamper national unity.

The cultural and educational standards of the present population are not high. Approximately one-fourth of all people over six years of age are illiterate, although strenuous efforts are being made at present to eliminate this evil. Illiteracy is most common and standards are lowest in the southern portion of the peninsula and in Sicilia (Sicily) and Sardegna, while standards are highest and the population is most advanced in the Po Basin.

**Numbers and Distribution.**—With a population of slightly over 41,000,000, the country as a whole has an average density of 344 per square mile. However, the people are far from evenly distributed. Population is most dense in the Po Basin, in Sicilia (Sicily), and in such portions of the plains as are free from malaria, while the mountain districts and Sardegna have the fewest people:

Agriculture is the most important activity, and engages the atten-

tion of 56 per cent of the working population. Consequently, it is rather surprising to find 66 per cent of all the people living in towns and cities with a population of over 3000. Napoli (Naples) is the largest city and contains nearly 1,000,000 people, but there are seventeen other cities with a population of over 100,000.

TABLE 137  
OCCUPATIONS OF THE POPULATION OF ITALY<sup>1</sup>

Occupation	Percentage of Gainfully Employed
Agriculture.....	52.1
Mines and quarries.....	0.6
Industry.....	24.0
Commerce and transportation.....	10.4
Army and navy.....	2.0
Professions.....	3.0
Domestic service.....	2.4
Others.....	5.5
Total.....	100.0

**Emigration.**—Italy's limited resources and dense population create a problem of the first magnitude. This problem is becoming constantly more serious, for the death rate is dropping more rapidly than the birth rate, and the population is thus steadily increasing. Prior to the World War, emigration provided a safety valve, and an increasing number of Italians were finding homes in foreign lands. This movement became so tremendous that in 1913 alone 872,000 people left Italy. At least half of all of these were temporary emigrants who later returned. The result of this emigration was decidedly beneficial. It temporarily relieved the population problem of the country, and the remittances sent home provided much-needed capital and aided in raising the standards of living. Moreover, those who returned brought with them a knowledge of and desire for improved standards which proved beneficial to the entire population.

However, conditions changed following the World War. Restrictions on the part of foreign governments closed the doors to Italian emigrants in many areas, and other regions to which they were accustomed to move were becoming saturated. Thus the home population increased rapidly, and the country no longer had the advantage of large remittances from overseas. Today emigration does not provide adequate relief from the pressure of population. The resulting situation is dangerous, and has provided the principal incentive for attempts at increased industrialization and improvements in agriculture.

<sup>1</sup> *Statistical Year Book of the League of Nations, 1931-32.*

TABLE 138  
 EMIGRATION AND REPATRIATION OF ITALIANS  
 (U. S. Department of Commerce)

Year	Emigrants			Returned Emigrants		
	Total	To European and Mediterranean Nations	To Trans-oceanic Nations	Total	From European and Mediterranean Nations	From Trans-oceanic Nations
1913.....	872,598	313,032	559,566	188,978	.....	188,978
1921-1925, average.....	303,443	172,539	130,904	143,281	78,961	64,320
1926-1930, average.....	220,943	126,584	94,359	136,812	76,815	59,997
1930.....	280,097	220,985	59,112	129,022	82,461	46,561

### SITUATION AND BOUNDARIES

Italy is the central member of the group of three great Mediterranean peninsulas. In former times it was a portion of a land bridge connecting the snowy Alps with the sandy Sahara. With the foundering of the Tyrrhenian Massif, this land bridge was broken, and Sicilia became an island, separated from the Italian peninsula by the narrow Straits of Messina and from the African mainland by a gap which is only about 100 miles in width. The central position of the present peninsula, between the two Mediterranean basins, facilitated commercial and political expansion, and provided the logical site for the growth of a power which would dominate the entire sea. On the other hand, the high northern barrier of the Alps lessened the effectiveness of Italy as a pathway between Europe and Africa.

The peninsular and insular form of Italy, with its three bordering seas, favored the growth of maritime activities. The large number of fishermen and the importance of commerce reflect this condition. The three coast lines, however, differ widely in importance. That of the Adriatic has been the least used. It has no natural harbor between Venezia and Brindisi, and the Apennines tend to isolate the coastal area from the more populous centers to the west. The Adriatic has been chiefly important as a longitudinal seaway connecting the Mediterranean proper with the area where the Alps could be most easily crossed.

The Ionian coast has several good harbors, but it faces an unproductive portion of Africa and the least important side of Greece. Its immediate hinterland is also hampered by the lack of rainfall. Consequently its harbors have been but slightly used.



Outline map of Italy.

The western coast is much more important than the other two. It has more good harbors, it receives the largest rivers of the peninsula proper, and is bordered by the most productive plains. Thus, in contrast to Greece, Italy faces west, as is evidenced by early Roman expansion and more recent commercial interests.

Toward the north the mighty barrier of the Alps isolates Italy from the European mainland. This isolation has never been complete, as even prehistoric man seems to have made use of the Alpine passes, but it was sufficient to foster cultural and linguistic unity. Only since the development of modern transportation facilities and the construction of tunnels have the central and western passes been of major importance in the movement of goods or peoples. Toward the northeast was a gateway which was of great historic importance, although used only to a limited extent for commerce. This crossed the bare Carso plateau over the Peartree and other passes, and connected the northern plains and the head of the Adriatic with the Sava Valley, and thence with the Danube Basin. Over this passed the ancient amber route, and through it poured the Huns, Visigoths, Ostrogoths, Avars, Lombards and other barbarian invaders. Later it was crossed by rail lines connecting Trieste with Austria and the Danube Basin. It has always been the weakest point in Italy's armor, and consequently it is not surprising that the present kingdom was quick to recover control of its passes following the World War.

The construction of the Alpine tunnels has placed Italy in close commercial contact with central and northern Europe, while the construction of the Suez Canal and the increased maritime activity on the Mediterranean have put it in closer contact with the major water routes. These changes have been reflected in increased commercial activity and an extended range of interests.

#### CLIMATE

Italy combines within its boundaries the two great types of European climate, continental and Mediterranean. The Alpine slopes and the Po Basin have a modified continental climate, with cool winters, hot summers, and rainfall fairly evenly distributed throughout the year. Milano (Milan) has a mean January temperature of 32.9 degrees Fahrenheit, and a mean July temperature of 76.5 degrees Fahrenheit, although extremes of 93.7 and 14.5 degrees Fahrenheit have been recorded. It has an annual rainfall of some 40 inches, well distributed throughout the year, but with a slight autumn maximum. Frequent storms add to the stimulating character of the climate, and consequently it is the portion of Italy which most closely approximates the human optimum. It is also a section well suited for temperate crops.

In central Italy the seasonal extremes of temperature decrease and

rainfall occurs mostly during the fall and winter. However, exposure and relief cause numerous local differences. Thus the Apennines shelter the regions to the west of them from the cold north and northeast winds, so that the Adriatic coast has colder winters and hotter summers than the west coast. Roma, with January and July means of 43.1 and 77.8 degrees Fahrenheit respectively, may be taken as typical of the central section. The city has an average rainfall of 32 inches, but less than 10 per cent of this comes during the summer, the maximum occurring in the autumn and winter. South of this point the climate is sufficiently mild for the olive and for citrus fruits, although the dry summers usually make some irrigation necessary.

In the southern portion of the peninsula and Sicilia the winters are warm, with freezing weather almost unknown. Thus Palermo has a January mean of 51.8 degrees Fahrenheit, while the July mean does not differ materially from the northern and central sections, being 77.7 degrees Fahrenheit. There is an average annual rainfall of 23.2 inches, but only 5.5 per cent of this comes during the summer. In this region agriculture is restricted to winter-maturing crops or to those raised under irrigation.

"Sunny Italy" is not a misnomer, for throughout the entire country the percentage of sunshine is high. In fact, it varies from 45 to 54 per cent of the total possible for this latitude. The hot, dry, sunny summers lead to a great deal of outdoor life throughout the peninsula, and this fact, together with the mild winters and delightful springs, adds to its value as a resort center.

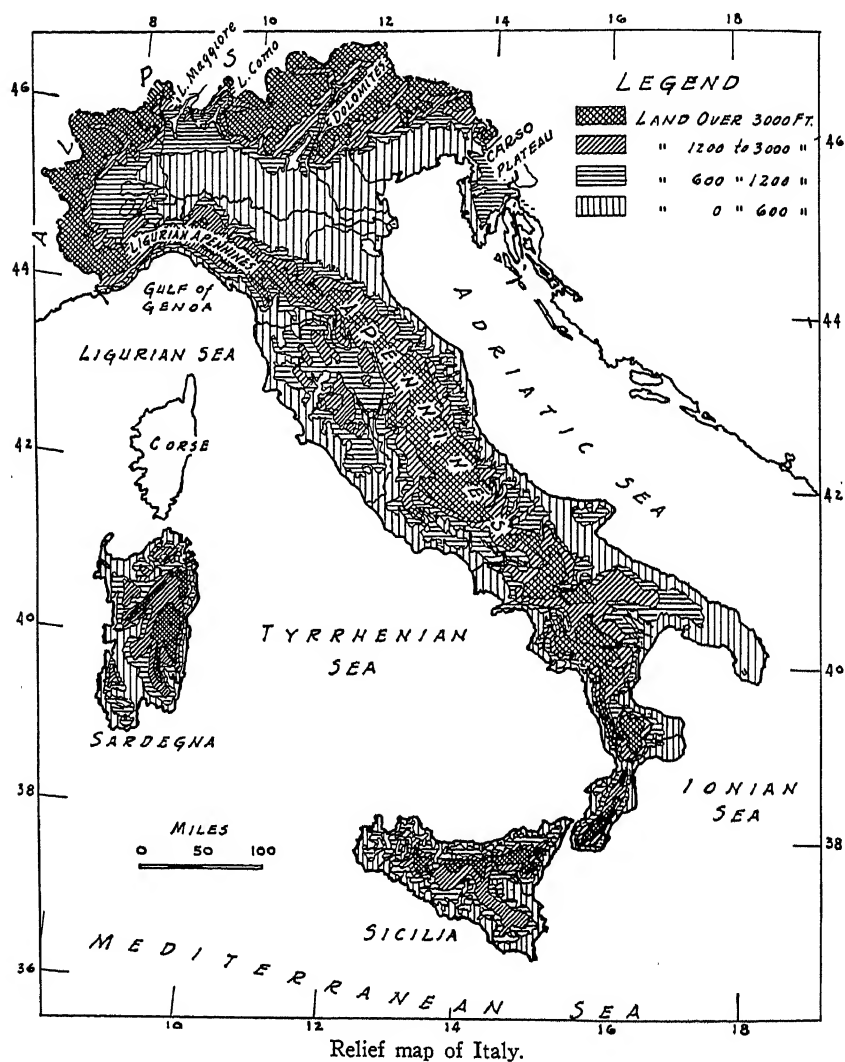
### GEOGRAPHICAL REGIONS

Italy includes within its borders the three great types of land forms, continental, peninsular and insular. The continental section includes the Alpine slopes and the northern plains, or, in other words, those regions which form the broad connection between the peninsula and the mainland. South from this connecting link runs a long, narrow peninsula, with a mountain backbone formed by the Apennines, and with uniform coast lines. Sicilia and Sardegna form the largest and most important units of insular Italy, although several smaller islands are included. These variations add pleasing variety to the economic and cultural life of the kingdom, but, combined with the long, narrow shape of the peninsula, they have retarded political unity and added to the difficulties of government.

## CONTINENTAL ITALY

*The Alpine Slopes*

The precipitous southern slopes of the Alps play a part in Italian life out of all proportion to their extent. From the snow and glaciers



of the Alpine peaks, which rise in places to an elevation of over 11,000 feet, numerous streams leap and tumble on their way to the lowlands

of the Po Basin. Some descend directly, while others pause for a time in that series of lakes which are flung like a necklace of jewels around the forested mountains. These lakes occupy what were formerly fords opening on the inland sea which once covered the northern plains. During the last Ice Age the glaciers deposited great terminal moraines across the open ends of these valleys, and transformed them into long, narrow and deep lakes. In their blue waters are reflected the green forests on their rocky shores, and even the snow-clad summits of some of the mighty Alpine peaks. At the same time, their southern exposure gives them such a mild climate that the vine, the fig, the pomegranate and even the olive grow profusely. Little wonder that they have become one of the most popular resort centers of Europe. These lakes perform other valuable but more prosaic functions. They act as settling basins, and as reservoirs which regulate the flow of the rivers leaving them. They thus prevent floods and add to the value of these streams for both water power and irrigation.

**Water Power.**—These Alpine streams provide Italy with an important source of power, a fact which is of special importance, for the nation has almost no coal or other power resources. In 1930 its hydro-electric plants had a capacity of 3,684,000 kilowatts, or 4,940,000 horsepower. This tremendous output is far greater than that of any other European country, and is largely the result of efforts during the past twenty years. It was hoped that this development would make it possible to reduce coal imports. However, the demand for power has kept pace with this increase, and coal imports have not decreased, but continue to be between 10,000,000 and 12,000,000 tons annually.

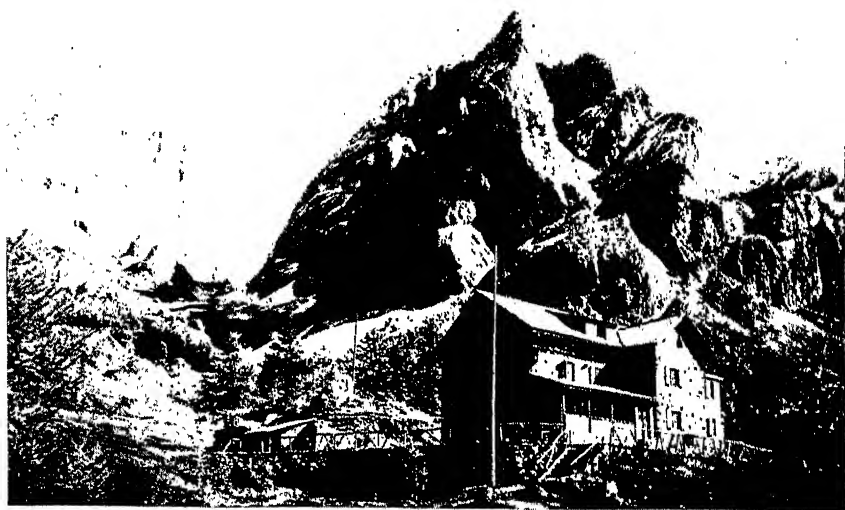
**Silk.**—Nestled along the valleys and around the lake margins are small areas of level and highly fertile land. The mild climate makes it possible to grow Mediterranean crops, and special attention is given to the vine, and to such tree crops as the mulberry and the fig. The valley of the Ticino is especially noted for the rearing of silkworms, as the mulberry grows profusely and the neighboring plain supplies ample, careful and patient labor. Numerous other valleys are only slightly less important. As a result, Italy ranks first in Europe and third in the world in the production of raw silk, producing 4882 metric tons in 1930. Part of this silk is manufactured in such cities as Como and Bergamo on the lower slopes, but much is sent to Milano and other cities of the plain.

The tourist industry adds materially to the income of this northern section. Not only are such lakes as Maggiore, Lugano, Como and Garda great tourist centers, but all sections of the Alps attract large



numbers of visitors each year. This is especially true of the Dolomites, whose fantastic limestone summits and wooded valleys have long been a Mecca for tourists from all sections of Europe. No portion of the continent offers such attractions in the form of magnificent mountain scenery combined with a delightful climate as do the Italian Alps.

This slope also carries the principal trade routes connecting Italy with central and northern Europe. Such valleys as the Adige and the Ticino provide approaches to the passes, and today carry the rail lines which link Italy to the rest of the continent. The construction of these



A scene in the Dolomites. (Courtesy of the Italian Tourist Information Office, New York.)

lines and of the Alpine tunnels has done much to break down the isolating influence of the Alps.

### *The Northern Plains*

The northern plains lie between the Alps and the Apennines, and around the head of the Adriatic. They constitute the largest continuous plains on the European shores of the Mediterranean, and support the most active and productive population to be found around that sea. A vast expanse of level and fertile land, combined with a modified continental climate having a well distributed rainfall, creates conditions for agriculture unexcelled in any area of equal size in the basin of the Mediterranean. A dense population, proximity to the water power of

the Alps, available raw materials, and excellent transportation facilities provide an environment admirably suited for manufacturing. Around the margins of the plains are numerous harbors well situated to carry its sea-borne commerce.

Throughout the centuries peoples from beyond the Alps poured into these plains. Celts, Teutons, and such steppe peoples as the Huns, Avars, Lombards and Slavs from the Danube Basin, were attracted by its fertile acres, and came to make homes or to ravage its prosperous communities. Thus the population became highly mixed, but the Celtic or central European round-headed stock dominates. This mixture resulted in an active, intelligent population, and one well equipped to utilize the natural advantages of the section. The people soon made it the greatest of all Mediterranean agricultural regions, and built up industries rivaling those of northern Europe. They built great commercial cities at the southern end of the transalpine routes, and their ports long held a commercial position unequalled by any throughout the world. Little wonder that today these people have become the cultural and economic leaders of Italy, and that within such a favorable environment the people have grown in numbers until they constitute 40 per cent of the population of Italy, although the plains which they inhabit occupy only 15 per cent of the area of the country.

These plains were once occupied by an arm of the Adriatic, but the vast amount of sediment carried by the streams from the Alps and the Apennines filled in this trough, and created a low, level plain, with fertile and easily cultivated soils. This formation is responsible for the low marshy character of the lower valley, and the island and lagoon type of coast line. The silting of the channel and the low gradient of the streams subject the eastern portion of the valley to disastrous floods. As a consequence, it has been necessary to construct dikes along the streams, both to prevent floods and to confine the current and give it greater scouring power.

There is a considerable difference between the eastern and western portions of the valley. The western portion is relatively high and well drained, but it lies in the rain shadow of the Maritime Alps and the Ligurian Apennines. As a consequence, irrigation is necessary, but fortunately the numerous Alpine streams render it comparatively easy. This area today contains 72 per cent of all the irrigated land of Italy. To the east of Mantova (Mantua) conditions change. The ground becomes low and marshy, and the rainfall becomes greater. Drainage therefore replaces irrigation as the principal problem of the farmer,

and has necessitated a great investment of capital before the land can be rendered suitable for cultivation.

Unlike most rivers of equal size, the Po has not served as an effective unifying force in the life of its valley. Its numerous north-bank tributaries long hampered east and west communication, while its wide marsh lands rendered north and south movement difficult. The river might have been more effective in this respect if it had been well suited for navigation, but its silted channel, the character of its delta, and its fluctuations in level cause it to be but slightly used. Today a few small boats ply its waters as far as Torino, and canals have been constructed connecting the main stream with many sections of the plain.

Due to greater rainfall and elevation, the force of the Alpine streams far exceeds that of those which rise in the Apennines. As a consequence, the Po has been pushed southward nearly to the base of the Apennines. The northern slopes of the valley are thus more extensive and more gentle than those to the south, and have the added advantage of facing the sun. They support the most carefully cultivated fields, and their communities are more prosperous than those to the south of the river.

**Agriculture.**—Agricultural methods in the northern plains closely resemble those of northwestern Europe. Intensive cultivation, fertilization, irrigation, drainage, and the use of machinery cause the production per acre to exceed that of peninsular and insular Italy. The greater importance of livestock and dairying also differentiates this region from the rest of the country.

The northern side of the valley in particular presents a delightful picture of rural life. The peasant homes are grouped together in numerous tiny villages. Each village is surrounded by well kept fields of wheat, corn and rice, and hedges of mulberry trees line the roads and separate the fields. Herds of cattle graze on the marshy meadows bordering the streams, and on the crests of the limestone ridges. Most of the slopes are covered with vineyards and orchards. The whole region gives an impression of prosperity and well-being all too uncommon around the Mediterranean.

*Wheat.*—Wheat is the great bread grain of the Italians, being eaten in the form of both bread and macaroni. Approximately one-third of all the arable land in the country is devoted to this crop, and it is raised in every province. However, the northern plains account for 40 per cent of the total yield. This is the result of the considerable area devoted to the crop, and of the fact that better methods of cultivation account for a considerably greater yield per acre than in other sections

TABLE 139  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS IN ITALY  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)		Production (thousands of units— bushels, except as noted)	
	1909-1913	1926-1930	1909-1913	1926-1930
Wheat.....	11,793	12,087	184,393	223,197
Oats.....	1,276	1,255	37,537	40,977
Corn.....	4,090	3,738	102,676	97,617
Rice.....	358	350	23,273	32,657
Potatoes.....	759	870	67,514	71,275
Sugar beets.....	130	252	1,799 <sup>a</sup>	2,626 <sup>a</sup>
Olive orchards.....	5,702 <sup>bc</sup>	5,650 <sup>c</sup>	47,283 <sup>bd</sup>	54,473 <sup>d</sup>
Grapevines.....	10,983 <sup>bc</sup>	10,636 <sup>c</sup>	1,215,621 <sup>be</sup>	1,040,391 <sup>e</sup>
Citrus fruits.....	111 <sup>f</sup>	125 <sup>g</sup>	786 <sup>a</sup>	721 <sup>ag</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> Within former boundary.

<sup>c</sup> Includes land also carrying one or more other crops.

<sup>d</sup> Unit, gallon of oil.

<sup>e</sup> Unit, gallon of wine.

<sup>f</sup> Three-year average.

<sup>g</sup> 1927-1930.

of the country. In spite of the fact that Italy ranks third among the European nations in the production of this grain, its dense population normally makes necessary imports equaling between one-third and one-fourth of the domestic production.

*Minor Cereals.*—Corn ranks second to wheat among the Italian cereals, and is used as both a human and an animal food. Its moisture requirements restrict it largely to the northern plains, which produce about three-fourths of the nation's total. Moisture requirements and the demands of the livestock industry likewise restrict the raising of oats to the Po Basin. Italy is the only European country producing any considerable amount of rice, and is the only European exporter of this grain. Rice is raised chiefly in the irrigated districts around Milano and on the marshy lands near the Po delta. Hemp, flax and sugar beets are other minor crops which are restricted almost entirely to the northern plain.

*Silk and Wine.*—Mulberry trees and vines are raised in large quantities, and are frequently grown on the same land. In fact, in the more fertile and intensively cultivated portions of the valley it is not uncommon to find a three-story type of agriculture, with the vine trained around the mulberry trees and wheat planted in the intervening spaces.

Silk production supplements that of the Alpine slopes, and feeds the mills of Milano, as well as providing Italy with its second most important export. Its extensive vineyards enable Italy to rank second to France in the production of wine, and third among the European countries in wine exports. For the most part, the Italian wines are of a lower grade than those of France, but those of the northern plain are the best in the country, and rank in quality with the best produced throughout other sections of Europe.

*Livestock.*—Large herds of livestock are supported on the grass-covered hill slopes and the irrigated pastures of the northern plain. However, they are most numerous in the lush water meadows along the Po and its lower tributaries. The abundance of such lands in the north, together with the cooler climate of that region, has made it the center of cattle raising and dairying. Much of the milk is turned into cheese, that made on the southern bank in Emilia taking the name Parma, while that of Lombardy takes its name from the town of Gorgonzola. The dairy industry also extends northward up the Alpine valleys, and there closely resembles the Swiss industry in methods and products. Cattle raising is relatively unimportant to the south of the Apennines, except in the Roman and Tuscan Plains, where imported Swiss cattle are fattened for market.

*Cities.*—In spite of the importance of agriculture, it has been the city dweller and not the peasant who has given the flavor to Italian civilization. The dense population and high productivity of the northern plain have made it rich in cities of great historical and economic importance. Torino (Turin), Milano, Parma, Bologna and Padova (Padua) are but a few of the interior cities which have left a profound imprint upon the life of the region. However, it has been the ports which have attained the greatest importance. These were characteristically built near, but not on, the deltas of the large rivers. Those to the east were first important. Ravenna was a leading port during the Roman period, but the silting up of its harbor put an end to its commerce. Its place was taken by Venezia (Venice) which, because of its unique position, became the dominant commercial city of the Middle Ages. More recently, Trieste and Fiume advanced rapidly, due to the stimulation of Austrian and Hungarian trade, but they too have declined, due to the fact that the new national boundaries have cut them off from their natural hinterlands. In the west Genova lay to the south of the Ligurian Apennines, but owed its importance to its relation to the plain and to the trade routes which crossed that region.

*Venezia*.—As long as the trade between Europe and the Orient flowed through the Mediterranean, the head of the Adriatic was destined to become the site of a great commercial center. Here the waters of the Mediterranean system approach most closely to the productive lowlands of central Europe. Here also natural routes lead northward over the Brenner, the lowest of the Alpine passes, and eastward over the narrow saddle of the Carso plateau to the middle Danube. Venezia was the city destined to profit by these favorable factors. But it had still another advantage, namely, that of protection. Founded by refugees fleeing in terror before the invading Huns, it was situated on 122 islands in the midst of a large lagoon. Attack from the land was impossible, and its tides and winds rendered attack from the sea almost equally hazardous.

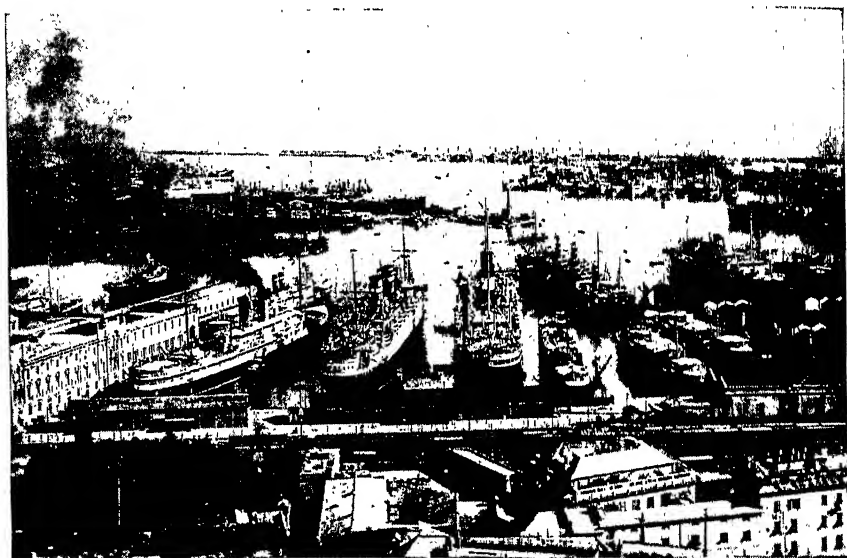
Developing under these favorable conditions, Venezia received an early start and grew rapidly. During the Middle Ages it became the greatest commercial city of the Mediterranean. To protect its trade routes, it conquered a large block of the Italian mainland and seized numerous islands and harbors along the sea route to the east. Through its marts passed the luxuries of the Orient, and its people soon became familiar with the finest of artistic goods from both the east and the west. The wealth acquired from its trade brought the leisure necessary for artistic achievement. Its citizens consequently turned their attention to the development of such artistic industries as the making of lace, glass and damask.

Unfortunately, the very conditions to which were due the rapid rise and early importance of the city also led to its decline. The diversion of the oriental trade around Africa placed the city far from the major trade routes, and the opening of the Suez Canal made it cheaper for northern Europe to ship directly by water rather than use the Alpine passes. Its harbor, while ample for its mediæval merchant marine, was too shallow for modern steamers. Furthermore, when the need for protection passed, its island location became a handicap, for it made difficult the construction of railway yards and modern port facilities. So the commercial importance of Venezia waned, its possessions fell to other powers, and its wealth and power became memories. Recent efforts to revive its trade by linking it with the mainland by a railway bridge and constructing a modern port on the neighboring mainland have largely failed.

But Venezia has achieved a different kind of importance. The rare beauty of its canals and lagoons, the magnificence of its palaces and churches, and the glamour and romance which surround its very name

have made it one of the greatest tourist centers of Europe. Each year some 800,000 visitors replenish its coffers by their expenditures.

*Genova.*—Although Genova lies outside the wall of the Ligurian Apennines, it is the great port of the western part of the northern lowlands. The city owed much of its mediæval importance to the fact that it possessed the only good harbor along an unfriendly coast line, and to its possession of good timber for shipbuilding. Its local hinterland was limited, but the Bocchetta Pass gave it access to the northern plain and the western Alpine passes. The construction of the Simplon and St. Gotthard Tunnels greatly increased the importance of these routes,



The port of Genova. (Courtesy of O. Starkey.)

and consequently enlarged the commerce of Genova. Its location on the western side of the peninsula has also been an advantage since the center of trade shifted to the Atlantic. The city has grown rapidly, and recently it has been the great rival of Marseille for first place among Mediterranean ports. Unfortunately, however, it has certain handicaps. Its harbor is not large and is frequently congested, and the rail facilities linking it with the north are inadequate. Still more unfortunate is its unbalanced trade. Its imports consist of such bulky goods as coal, grain, timber and raw cotton, destined for the Po Valley and Switzerland. On the other hand, the manufactured products of those regions find it more advantageous to move overland, and only small amounts pass out through the port of Genova. Imports are thus

four to six times as great as exports. In spite of these handicaps, the port is growing rapidly, and its future seems assured.

*Milano.*—In the midst of the Lombard plain, midway between the Alps and the Po, lies Milano, the most important city of the north and the second largest city of Italy. Upon it converge the Alpine routes using the Simplon and St. Gotthard Passes, while to the south roads lead to Genova and peninsular Italy. It also lies astride the route from Venezia and the Adriatic to the Rhône Valley. Little wonder that it was at first hampered by being constantly subject to attack, or that it later became the great commercial center of the Po Basin and the greatest railway center of Italy.

Within recent years it has also become the leading industrial center of the nation. Proximity to the water power of the Alps and to the silk of the lower Alpine slopes has enabled it to rival Lyon as the leading silk center of Europe. Cutlery and machinery are other products which are being manufactured in increasing amounts. The excellent contacts of the city with markets and raw materials, and the dense and relatively prosperous population of its immediate hinterland should insure increased industrial importance in the future.

Today Milano is a thriving up-to-date city. Its factories, office buildings and busy railway yards overshadow in importance its famous cathedral. More than any other city it may be said to typify modern Italy.

*Torino.*—Torino occupies the Piedmont slopes at the western end of the Po Basin. Like Milano, its favorable location made it an important commercial center. The Mt. Cenis route gives it access to the Rhône Valley, and it lies at the head of navigation on the Po. Recently, however, its industrial activities have overshadowed its commercial importance. Woolens are produced in large amounts, but the city is especially noted as the automobile manufacturing center of Italy.

#### PENINSULAR ITALY

In peninsular Italy the continental climate of the north is forgotten. Except in the higher elevations, the winters are mild and the summers hot and dry. Here truly is "Sunny Italy," where the warmth and cloudless skies provide a continual invitation to live out-of-doors. Here also the broad plains of the north give way to a belt of mountains which form the backbone of the peninsula. The peninsular plains are few and small, but, as if to compensate for their lack of size, nature has en-



dowed them with unusual productivity, and man has sprinkled them with magnificent cities. Even the people differ from their northern neighbors. Here are the vivacious Mediterranean long-heads, with their love of play and keen artistic sense.

### *The Apennines*

From the Maritime Alps to the toe of Italy stretch that wide range of mountains known as the Apennines. Together with their foothills and projecting spurs, they occupy the greater part of the peninsula. They thus seriously limit the amount of arable land in a region whose dense population makes necessary the cultivation of every available acre. Although they are crossed by frequent passes, they constitute an important commercial barrier between the two coasts. These mountains form a great arc skirting the Adriatic in the central part of the peninsula, but reaching the western coast at both their northern and southern ends. They thus separate and isolate the various lowland districts, and have aided in bringing about the lack of unity which long characterized Italy.

**Northern Apennines.**—The northern Apennines meet the sea along the Ligurian coast, and are responsible for making the Italian Riviera a close competitor of its French counterpart as a resort center. Their steep slopes, which rise to an elevation of some 7000 feet, keep out the cold winds from the north, and thus make possible orchards of olives and oranges, as well as magnificent vineyards. Extensive forests of chestnut, oak and beech cling to many of their slopes, and where the forests have been removed, large flocks of sheep find excellent pasturage. The highlands are broken by numerous passes, over which run the rail lines connecting the northern plains with the Ligurian Sea and the plains of the peninsula. This section of the Apennines is rich in marble, and that quarried at Carrara is famous in all parts of Europe. The water power of their southwestern slopes is being rapidly exploited, but the lack of natural reservoirs and the wide yearly variations in rainfall seriously complicate its use.

**Central Apennines.**—In the central portion of the peninsula the range is divided into three separate chains rising in elevation toward the east, until the most eastern chain attains a height of some 10,000 feet and then drops abruptly to the Adriatic. The scenery is bold and wild, and a Karst formation occurs in places. Between the ridges are high, cold valleys which are extensively used for summer grazing, and

which support some grain and forage crops. Snow lies on the higher slopes from November to May, and adds to the water-power resources. Their slopes were once clothed with valuable forests, but axe, fire, and close-cropping sheep and goats have laid bare large areas and destroyed new growth. Consequently erosion is rapid, and much coarse sediment is washed down to choke up the channels of the streams, and to aid in the creation of those malarial marshes which render such large portions of the peninsular plains unsuitable for human habitation. Within recent years the Italian government has been attempting to correct this evil by spending large amounts of money to reforest the central and



Orvieto, an Italian hill town. (Courtesy of O. Starkey.)

southern Apennines. Although the mountains attain their greatest width and elevation in this central part, such river valleys as the Aterno provide cross communication, and are followed by roads and railways.

**Southern Apennines.**—In the south the Apennines break up into isolated masses of old rocks interspersed with volcanic formations. The forests have been largely removed, and large flocks of sheep and goats graze on the meager vegetation of the slopes. The vine, the olive and the orange occupy the lower slopes, where the climate is semi-tropical. Sulphur constitutes the only important resource of these southern mountains. Isolation and the absence of a stimulating climate have aided in giving this section a backward population with low living standards.

*The Western Lowlands*

Within the great arc of the Apennines lie the western lowlands, which constitute the political and cultural heart of Italy and rank second only to the northern plains in economic importance. They form an area of varied relief, with numerous hills, plateaus and isolated volcanic peaks separating small plains of great fertility. Much of the coastal area and the lower portions of the river valleys have been occupied by malarial marsh lands which are being rapidly reclaimed.

Since this area is open to the westerlies, the rainfall here is heavier than that in any other part of Italy. This abundant moisture, combined with the fertile alluvial and volcanic soils of its valleys, creates local areas of unusual fertility, where man has built great cities and has attained the leisure essential for high cultural development.

**Tuscany.**—To the north, Tuscany occupies the valley of the Arno and is one of the most productive regions in all Italy. This district was formerly known as Etruria, and its people were the most powerful group in the peninsula, prior to the rise of Roma. However, relief divides the region into a series of compartments, making unity difficult. The Etruscans thus fell prey first to northern invaders and later to Roma. Under Roman rule the region increased in importance, and its surplus grain flowed south to feed the Imperial City. Following the fall of Roma, Tuscany achieved its greatest prominence. It maintained its independence in the face of attacks by the Pope, the Lombard cities, and various foreign conquerors. Under the Medici, order was achieved, thus permitting the peaceful cultivation of its fertile soils. Trade expanded, and its cities became great commercial centers.

**Firenze (Florence).**—Firenze, at the southern end of the principal route through the Apennines, controlled the commerce between the northern plains and the peninsula. The city thus acquired great wealth and importance, and turned its attention to artistic accomplishments and learning. It became the cultural center of Italy, a position which it has occupied down to the present time. Today its magnificent buildings, its world-famed art galleries, and the beauty of the surrounding country attract thousands of visitors each year. Industrial life has long been important, and has been largely concerned with the production of artistic products such as silk, jewelry and embroidery. More recently, however, the city has developed an important straw hat industry, and the proximity of the principal lignite deposits of Italy and the iron ore of Elba are leading to the growth of heavier industries.

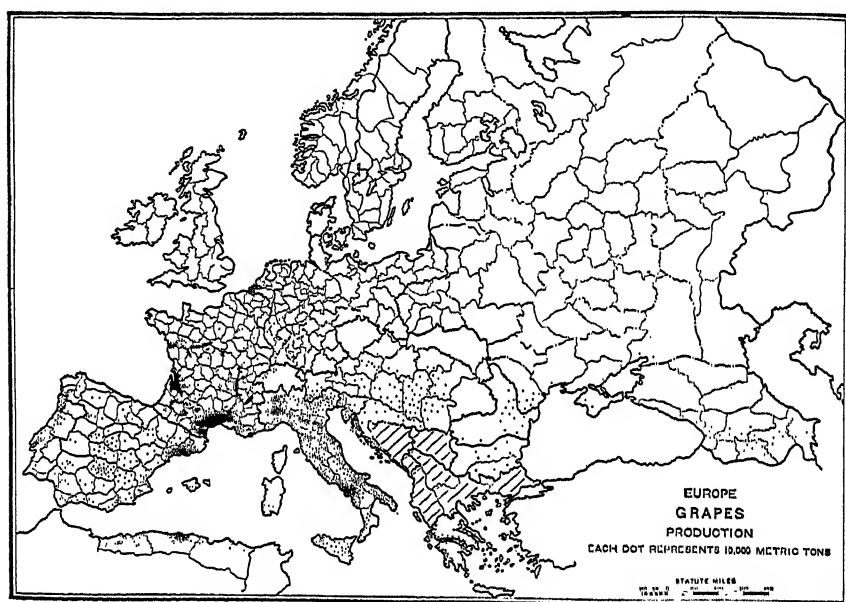
*Pisa and Livorno (Leghorn).*—Pisa was long the principal port of Tuscany, and rivaled Firenze in importance. However, with the silting up of its harbor its commerce declined, and today it is chiefly important as a tourist center. Its trade passed to Livorno, which has become the leading port of that portion of the west coast lying between Genova and Napoli.

*Agriculture.*—The fertile soils of the Arno Valley are intensively cultivated. On the small farms of the Tuscan peasants olives and the vine compete for space with vegetables and grains. In fact, in the more fertile sections olive trees, the vine, and grains or vegetables occupy the same land. Much wheat with long and pliable stems is raised to meet the demands of the straw hat industries of Pisa, Livorno and Firenze. Its olive oil is of the highest quality of any produced in Italy, and is in wide demand. The marsh lands of the coastal areas, and the lower valleys are being drained, thus removing the danger of malaria and providing excellent pasture lands.

In spite of the great productivity of Tuscany, its dense population has led to constant emigration. Its people have moved to North and South America, and their high standards have made them universally welcome.

*Latium.*—The plains of Latium, known as the Campagna, occupy the central part of the western lowlands. They are drained by the Tiber, which is the longest river of the peninsula. Though less fertile than the plains of Tuscany, these lowlands were formerly well populated, and their farmers constituted the chief element of stability and strength in the early history of Roma. However, centuries of deforestation, with the consequent silting of the lower stream channels, turned most of these plains into a great marsh land plagued with malaria when the autumn rains acted on the decaying vegetation of the swamps. Until recently, the famous Pontine Marshes, in the southern part of the Campagna, were the most unhealthy region in Italy. As a consequence of the expansion of these marsh lands and of historical changes, grain fields were deserted and towns were abandoned, and the sturdy Roman farmer became a fever-stricken herdsman. The pasturing of horses and cattle is the principal present activity, although recent extensive drainage projects are improving productivity and health conditions. Where such highlands as the Alban Hills rise above the general level of the plains, little islands of dense population occur. The volcanic soil of these slopes support luxurious vineyards, and large groves of figs, olives and oranges.

*Roma.*—The Eternal City dwells upon its seven hills overlooking the Tiber. In ancient times the Tiber was a navigable river, and brought the commerce of the Mediterranean to the gates of Roma, while its hills provided protection against possible invaders. Furthermore, the surrounding fertile plains of the Campagna provided food for the city population and its legions. Time has changed the importance of these factors. The larger boats of the present day can no longer navigate the shallow river, and the hills serve to protect the



Italy ranks first among the European countries in the acreage devoted to grapes but is surpassed by France in the production of wine. (U. S. Department of Agriculture.)

city against river floods and the fever of the marshes, rather than against invading armies. However, its central position in the peninsula and its situation at the junction of important routes continue to make it an ideal site for a capital. "All roads lead to Roma" is as true for Italy today as it was during the period of the Empire. Northward the valley of the Tiber offers an easy highway to the valleys of the Arno and the Po. To the south, routes lead to Napoli and to the Ionian Sea, while to the east there are passes leading to the Adriatic.

However, geography alone cannot explain why Roma was able to build up and maintain its mighty empire. The genius of its people for statecraft has little to do with its physical surroundings. Neither can geography explain its present importance. Historical momentum

has given it an asset of untold value, but no force has been more powerful in continuing its influence than has the Roman Catholic Church. Its historical position must and does attract to it peoples from all lands, while the fact that it is the capital of Italy aids in causing it to rank third in population among the cities of the nation.

**Campania.**—Campania occupies that portion of the western lowlands lying around the Bay of Napoli. Being highly productive, it supports a very dense population. Its fertile volcanic soils and mild southern climate are ideal for the olive, the fig and the vine, and excellent for vegetables. The tiny farms of its crowded peasant population surround its many towns, and are veritable garden plots. Cultivation is very intensive, but agricultural methods are backward, and the yield is consequently not as high as might be expected in such a favorable environment.

*Napoli.*—Overlooking its beautiful bay, Napoli is one of the most interesting and one of the dirtiest cities in Italy. Although regarded chiefly as a tourist center, it has the finest harbor on the west coast, and is the most important port to the south of Livorno. Its people have recently encouraged the exploitation of its many industrial advantages, and have thus assisted in making it the largest city of Italy. Its large supply of cheap labor, nearby water power, and excellent communication by both land and sea, have led to the growth of such industries as sugar refining, automobile manufacturing, and the spinning and weaving of textiles, and these in turn have caused the decline of such handicrafts as wood carving and lace making.

### *The Eastern Plains*

The southeastern plains in the "heel" of the peninsula are extensive, but are handicapped by being on the leeward side of the Apennines, and consequently dry. A considerable portion of the area is devoted to the raising of a type of wheat which is of special value in making macaroni. The peasants devote a part of their attention to the vine, and the raising of olives is more important than in any other section of Italy. Nearly 40 per cent of the productive land is devoted to this crop, although the backward condition of the population causes the olive oil produced to be of low quality. Brindisi is the principal port of the region, and has been important in eastern trade since the period of the Roman Empire. This is the section of the peninsula lying nearest Greece, and consequently it was the site of numerous Greek colonies

which left a cultural heritage to influence the life of the entire peninsula.

**The Olive.**—The olive, most typical of Mediterranean crops, is grown in all portions of the peninsula, but finds an especially congenial home in the south. Apulia, Calabria and Sicilia lead in acreage and in the production of olive oil. In the dry eastern plains of Apulia the olive is one of the few crops that can be grown, and here it attains its greatest relative importance. This one province contains over one-half the specialized olive acreage of Italy. In many sections of the country it is customary to raise such other crops as vines and grains on the same land as the olive. This reduces the yield of each crop, but gives a high combined yield per acre. As a consequence, although Italy has a greater acreage of olive trees than any other country, it normally ranks second to Spain in the amount of olive oil produced. However, the higher quality of the Italian oil causes this nation to rank first in the value of the total product. This crop should continue to be of major importance in the future, as the olive tree is excellently adapted to the climatic conditions of southern Italy, and olive oil will doubtless continue to be used as a substitute for animal fats in the diet of the average Italian.

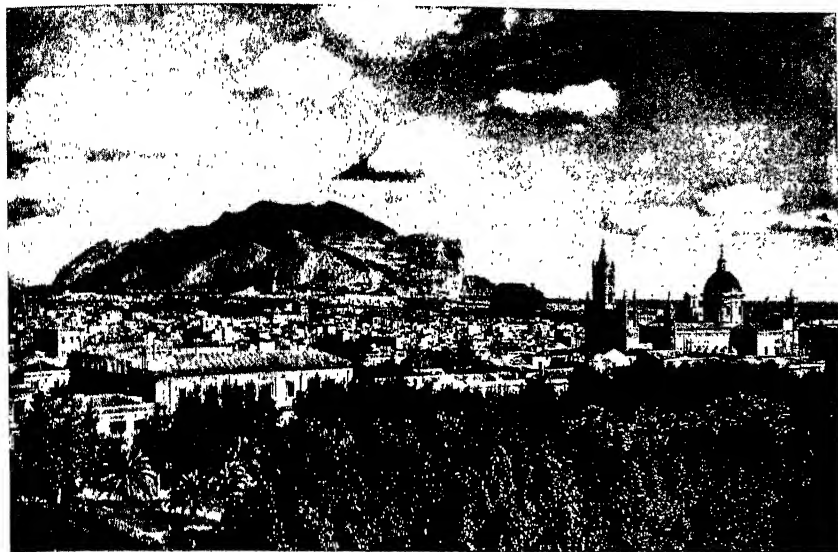
#### INSULAR ITALY

**Sicilia.**—Sicilia not only is the largest island of the Mediterranean, but occupies the most strategic position in that sea. Separating as it does the eastern and western basins, it has been touched by every people and every civilization which has exerted any wide influence within the Midland Sea. Siracusa (Syracuse) and other Greek colonies achieved a high position in cultural attainment, and were thriving commercial and agricultural centers. These settlements were most numerous on the eastern coast, and during the classical period this coast dominated the island. Following the Roman conquests, the northern coast assumed the leadership, which it continued to hold.

However, the high cultural attainments and prosperity of the island are things of the past. Today its population of over 4,000,000 is largely made up of illiterate, landless and poverty-stricken peasants. A vicious type of absentee landlordism and the ravages of malaria have helped to bring about this change. The great density of population, which is greater than that in any other agricultural district in Europe, has also aided in lowering standards and in making the island a great exporter of men. Its location in one of the most active earthquake and volcanic

zones of the Mediterranean adds to its woes, and has frequently resulted in the destruction of cities and in great loss of life and property.

*Agriculture.*—Rainfall is light and comes mostly during the winter, but the fertile limestone soils have an unusual capacity for storing water, with the result that the island has long been an important agricultural area. Its surplus wheat was in great demand in the markets of Athēnai, Carthage and Roma, and its horses found ready markets in all sections of the Mediterranean. Many of the more level areas are still devoted to wheat, but the demands of the dense population and the expansion of malarial marshes at the expense of the grain lands pre-



Palermo, with Mt. San Pellegrino in the background. (Courtesy of the Italian Tourist Information Office, New York.)

vent any exports. Its upland pastures and moist, lowland meadows are largely devoted to the raising of sheep, cattle and horses having decreased in both numbers and quality. The olive and the vine are extensively raised, but primitive methods of manufacture cause the wine and olive oil to be of very low quality. Recently there has been a notable increase in the citrus fruit industry in the north and east, and the more progressive peasants are taking advantage of the twelve months' growing season to raise winter vegetables for the northern European markets. In general, agricultural methods are extremely backward, and the crop yields are very low.

*Sulphur.*—While the great majority of the population is engaged in agriculture, there is some development of mining and commerce.



Italy has long been one of the world's leading producers of sulphur, and 90 per cent of the nation's output comes from Sicilia. American competition has injured this industry, but it might be materially improved by the use of modern methods and a further reduction of the excessive royalties. Palermo and Messina are the leading ports and largest cities of the island.

**Sardegna (Sardinia).**—Sardegna lacks the strategic and agricultural importance of Sicilia, and, although nearly as large, supports only one-fifth as many people. Mountains cover nine-tenths of the island, but, although they contain valuable resources in the form of forests and minerals, isolation and lack of transportation facilities cause them to be undeveloped. Lead, zinc, silver, iron, manganese, and lignite are found in considerable quantities, and some were mined as early as the Phœnician period. Today mining is unimportant, due to backward methods and inefficient labor. Recent efforts to expand this activity through the investment of capital and the supplying of cheap electrical energy have met with but limited success. The small plain areas are fertile but malarial, and droughts are frequent. A recently completed irrigation project has provided water for 50,000 acres of land, and should have a beneficial effect on agriculture. In the more densely settled areas are sizable vineyards, citrus fruit orchards and vegetable gardens, but agriculture is extremely primitive and the production per acre is very low.

## AGRICULTURE

Differences in climate and relief have made Italy a land of varied agricultural production. The stock raising and forestry of the Alpine slopes resemble similar activities in Switzerland, and the diversified farming of the Po Basin is comparable with that of the most progressive sections of northern Europe. The varied and intensive agriculture of Tuscany, where three crops are frequently raised upon the same land, is typically Italian. The cultivation of wheat in the south is typical of eastern Europe, and the vineyards and orchards resemble those of Greece and sections of the Iberian Peninsula. In general, agriculture decreases from north to south, both in diversity and in the quantity and quality of the crops produced.

In spite of this variety of products, the total yield is not large, and is inadequate to meet the needs of the population. Physical handicaps are partially responsible for this low yield. Mountains cover much of the country, many of the lowland areas are swampy and malarial, and

TABLE 140  
THE UTILIZATION OF THE LAND IN ITALY<sup>1</sup>

Types of Land	Percentage of Total
Seed lands:	
Cereals.....	23.0
Temporary grass and other forage crops.....	6.9
Other arable and fallow.....	13.1
Meadows and permanent pastures.....	21.9
Horticulture.....	4.8
Forests (including chestnuts).....	18.0
Productive non-cultivated lands.....	4.0
Total agrarian and forest lands.....	91.7
Unproductive area.....	8.3
Total.....	100.0

large sections have inadequate and uncertain rainfall. On the other hand, much can be attributed to historical and human factors. In the south an unfortunate system of absentee landlordism serves as an additional handicap, but the greatest drawback is the lack of efficiency of the population. Throughout peninsular and insular Italy illiteracy is common among the peasants, and they lack both the knowledge of improved methods and the means to make that knowledge effective if it were once secured. Many exist on a subsistence level, their principal aim being to force their tiny holdings to yield sufficient food for themselves and their families. Faced with these conditions, it is little wonder that production is low, and that the provision of an ample food supply is one of the chief problems of the state.

Within recent years this problem has become more serious, due to the rapid growth of population, to the concentration of an increasing proportion of the people in large industrial centers, and to efforts to raise living standards. Faced with these conditions, the present government has been making every effort to increase agricultural production. These efforts have resulted and can result in only limited success. Some new land has been and may be added by irrigation, drainage and malaria control, but it is estimated that only about 50 per cent of the area of the country can ever support crops, and some 47 per cent is now being used. The possibilities of any material extension of acreage are thus slight. Rather, it seems probable that increased wages and living standards may drive out of cultivation some of the marginal land now used. The possibilities of any increase in the yield per acre are likewise

<sup>1</sup> McGuire, C., *Italy's International Economic Position*, The Macmillan Company, New York, 1927.

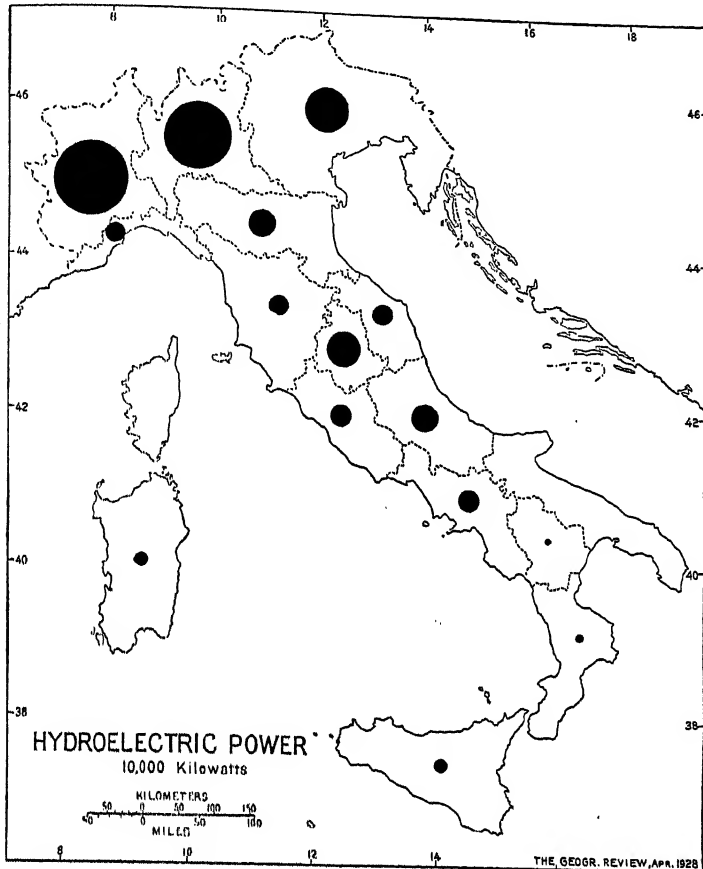
limited. Capital is not available for the purchase of sufficient machinery and fertilizers. In many cases there is need to consolidate the tiny farms into larger holdings which may be more profitably worked, and in other cases there is a need to break up large estates and eliminate absentee landlordism. Both of these reforms are difficult, and will require much time. The same is true of any improvement in agricultural methods on the part of the peasants. This must depend upon improvements in the education and economic position of a large part of the population. Accordingly, the possibilities for agricultural improvement are limited, and any favorable change can result only from long and frequently expensive effort. It thus seems likely that Italy will continue to depend upon outside sources for an important portion of its food supply.

### INDUSTRY

Manufacturing grew up side by side with commerce during the days of the Empire and the Middle Ages, and until the beginning of the last century Italy was regarded as one of the leading industrial regions. However, the lack of mineral resources and the unsettled political conditions made it slow to respond to the changes brought about by the Industrial Revolution, and it was soon left far behind in the race for industrial supremacy. More recently, political unification and the development of transportation facilities laid the basis for a new expansion of industry, which moved forward with increasing rapidity until the post-war depression provided a temporary check. At present, the industrial equipment of the country has a capacity considerably beyond the consuming power of the domestic market, and as a consequence manufactured products make up over 60 per cent of all the exports of the country.

**Resources.**—Italy has very scant supplies of basic raw materials and fuels. Perhaps its greatest handicap is the lack of coal. Its total reserves of coal and lignite combined amount to 340,000,000 tons, of which 90 per cent is lignite. The newly acquired province of Istria mines practically all the coal, which is, unfortunately, of such a quality as to be unsuitable for coking. The most valuable lignite deposits are found in Tuscany, and this province accounts for 72 per cent of the national production. The inadequacy of the coal resources is well illustrated by the fact that in 1930 only 680,000 metric tons of coal and lignite were mined throughout the entire country, although 13,000,000 metric tons were consumed. The abundance of water power compen-

sates in part for the lack of fuels. Unfortunately, however, this resource is not evenly distributed. Some 75 per cent is located in northern Italy, and 22 per cent is in the central part of the country. Moreover, water power has been developed nearly up to its profitable limit, and any future expansion of industry will necessitate increased fuel imports.



Installed hydro-electric power of all plants having a capacity of 300 kilowatts or over, December, 1925. (From "White Coal in Italian Industry," by W. O. Blanchard; courtesy of the *Geographical Review*, published by the American Geographical Society of New York.)

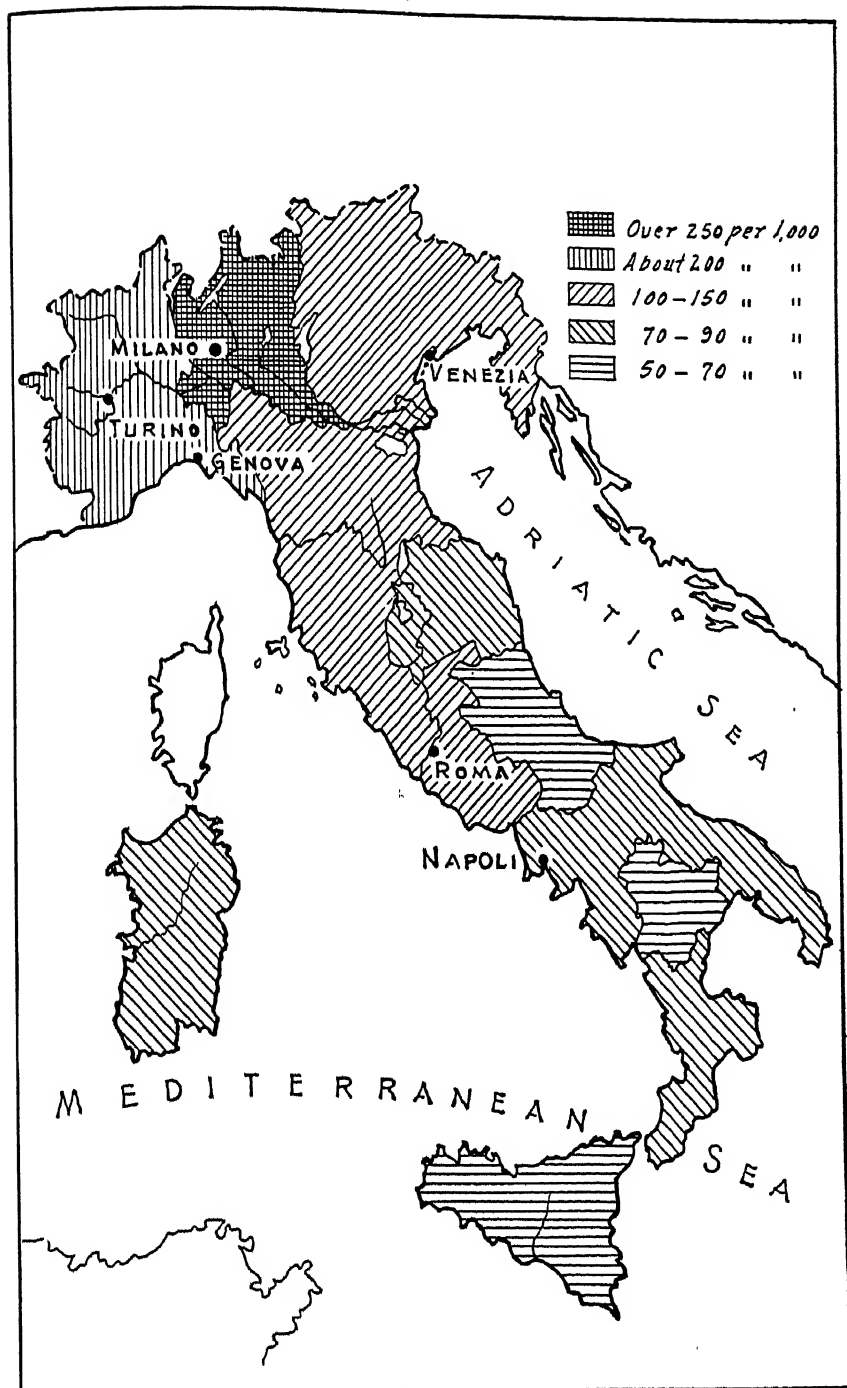
Other minerals are almost as scarce as fuels, as is shown by the fact that in 1930 the combined output of all mines and quarries was valued at only \$56,676,000. Limited deposits of iron ore are located on the islands of Elba and Sardegna, in the Piedmont district, and in the vicinity of Bergamo in the north. Central and southern Italy are very poorly supplied with this metal. The country normally imports a

considerable proportion of its iron requirements in the form of ore, pig iron and scrap iron. The sulphur of the south, the marble of the northern Apennines, and the mercury of the central Apennines constitute the only other minerals produced in important amounts. Bauxite, zinc, lead, manganese, and a few other minerals are mined in limited amounts. The island of Sardegna contains the only mineral resources not being fully exploited at present.

Forest resources are likewise limited. Only one-sixth of the country is wooded, and most of the forests occur in the north. Conifers are largely lacking, some 90 per cent of the forests being made up of such hard woods as beech, oak and chestnut. These resources are inadequate to meet the local demand, and wood to the value of more than \$30,000,000 is imported annually.

Although deficient in fuels and basic raw materials, Italy has two advantages from the point of view of industrialization. The first consists of a large supply of cheap labor, a portion of which is skilled. The success of many Italian industries is based upon low labor cost. The second favorable factor is the central location with respect to markets. The Mediterranean region as a whole is but slightly industrialized, and offers a considerable market for Italian goods. Likewise, the Alpine tunnels open up the markets of northern Europe, as well as providing a convenient means for the importation of essential raw materials. Modern Italian industrial life has been built around the exploitation of these two advantages and the utilization of its one great resource, water power.

**Types of Industries.**—Textiles form the oldest and most important of the major industrial groups. Cotton leads, from the point of view of both the number employed and the value of the output. Much of this product is consumed locally, being especially suitable to the climate, but it also provides the most important single export of the country. The spinning and weaving of silk constitutes one of the oldest industrial activities of the country. It is based almost entirely upon the use of local raw silk, and has an abundance of cheap but skilled labor to draw upon. In spite of these advantages, Italy ranks behind France, Germany and the United Kingdom in this activity. Woollen manufacturing is also important in the Piedmont district. Despite the large number of sheep in the country, most of the raw material has to be imported. Wool fabrics are exported in large and increasing amounts. Recently Italy has taken advantage of its abundant labor, chemicals and water power to build up a rayon industry second only to that of the United States. In spite of the fact that it has to import



The distribution of industrial activity by departments. Figures given are per 1000 of the employed population. (After Newbigin.)

pulp from Scandinavia, this industry is thriving, and shows great promise for the future.

Most of the textile factories are located in the north. Not only are such raw materials as silk, wool and hemp more abundant in that region, but it has the greatest amount of water power, and the most capable labor. Milano, Bergamo, Como, and other Lombard cities are the leading silk centers, while most of the woollen products come from Torino and other Piedmont towns. The cotton industry is more widely distributed. It is located not only in the north, but also in Tuscany and around Napoli.

The metallurgical and engineering industries rank second to textiles in importance. The rise of these industries has been recent, taking place largely during and since the World War. The lack of coal and iron ore causes the production of pig iron to be low, and there has been but slight advance in this activity. However, the manufacture of steel has doubled since 1913, and Italy slightly exceeds Poland in this industry. Steel is extensively used in the manufacture of textile and electrical machinery, but even more of it goes into the making of automobiles and ships. Within recent years the country has ranked third among the European powers in shipbuilding, and its automobile industry is adequate to supply the domestic market and provide a considerable surplus for export.

In these activities the north again enjoys a commanding position, but its leadership is less pronounced than in textiles. Local deposits of iron ore and the facilities of Genova for coal imports have aided the growth of the machinery and automobile industries in Milano and Torino. The peninsula also contains important factories of this type. The iron of Elba and local lignite deposits have favored their growth in Tuscany. Napoli has some local iron ore and water power, and is well situated for the importation of fuels and raw materials. Consequently, the city and the surrounding towns manufacture steel and turn much of it into railway equipment.

### TRANSPORTATION

Continental and peninsular Italy are moderately well supplied with railway facilities, although they are somewhat behind the northwestern European countries in this respect. The system is most complete in the north, and declines somewhat in mileage and efficiency toward the south. Unfortunately, Sicilia and Sardegna are handicapped by inadequate transportation facilities of all types. A well developed road sys-

tem was a heritage of imperial Roma, but in many sections it was allowed to lapse into disuse, following the break-up of the Empire. Recently, however, it has been repaired and added to, and, except in the most rugged sections, the country is well supplied with roads. Italy has also made rapid progress in building up its merchant marine, which now ranks approximately on a par with that of France in tonnage.

### FOREIGN TRADE

Considering its size and density of population, Italy is remarkably self-sufficient, and this is reflected in a low per capita foreign trade. In value this per capita trade only slightly exceeds that of Greece, and is less than that of any western or central European power. Exports consist largely of factory products, and raw materials form the most important group of imports. According to value, the leading individual exports were cotton fabrics, raw silk, fruits, rayon, rayon and silk fabrics, and wool fabrics; while the leading individual imports were wheat, raw cotton, coal, iron and steel, and machinery.

Germany is the greatest market for Italian exports, and is closely followed in this respect by the United States, France and the United Kingdom. The same countries provide Italy with most of its imports, although in this case the United States ranks first and Germany second.

Imports, being largely bulky raw materials, move principally by water. On the other hand, the exports are chiefly manufactured goods of small bulk and high value, and accordingly it is preferred to move those destined for the continental markets by rail. This results in most Italian ports having a considerable excess of imports over exports.

### BIBLIOGRAPHY

- Almagia, R., "The Repopulation of the Roman Campagna," *Geographical Review*, 1928, vol. 18, pp. 606-615.
- Blanchard, W. O., "Italy and the Adriatic," *Journal of Geography*, 1928, vol. 27, pp. 238-243.
- "The Status of Sericulture in Italy," *Annals of the Association of American Geographers*, 1929, vol. 19, pp. 14-20.
- "White Coal in Italian Industry," *Geographical Review*, 1928, vol. 18, pp. 261-273.
- Buchan, J. (ed.), *Italy*, The Nations of Today Series, Houghton Mifflin Company, New York, 1923.
- Cippicio, C., *Italy, the Central Problem of the Mediterranean*, Oxford University Press, London, 1926.



- Deecke, W., *Italy*, Swan Sonnenschein & Co., Ltd., London, 1904.
- Dietrich, B. F. A., "The Italian Harbors on the Adriatic Sea," *Economic Geography*, 1931, vol. 7, pp. 202-210.
- Dominian, L., "Italian Hydroelectric Industry," *Trade Information Bulletin No. 238*, U. S. Department of Commerce, Washington, 1924.
- Fleur, H. J., "Cities of the Po Basin," *Geographical Review*, 1924, vol. 14, pp. 345-361.
- Foerster, R. F., "The Italian Emigration of Our Times," *Harvard Economic Studies*, 1919, vol. 20.
- Hobson, A., "Agricultural Survey of Europe—Italy," *Report F. S. 35*, U. S. Department of Agriculture, Bureau of Agricultural Economics, Washington, 1925.
- McGuire, C., *Italy's International Economic Position*, The Macmillan Company, New York, 1927.
- Moriarty, D. J., "International Trade in Citrus Fruits," *Trade Promotion Series No. 77*, U. S. Department of Commerce, Washington, 1929.
- Newbigin, M. I., "Italy and the Adriatic," *Scottish Geographical Magazine*, 1916, vol. 32, pp. 466-477.
- Rebora, P., "Population and Emigration in Modern Italy," *Journal of the Manchester Geographical Society*, 1927, vol. 41, pp. 38-52.
- Vinelli M., "Water Conservation in Sardinia," *Geographical Review*, 1926, vol. 16, pp. 395-402.

THE IBERIAN PENINSULA—SPAIN AND PORTUGAL  
(ESPAÑA AND REPÚBLICA PORTUGUESA)

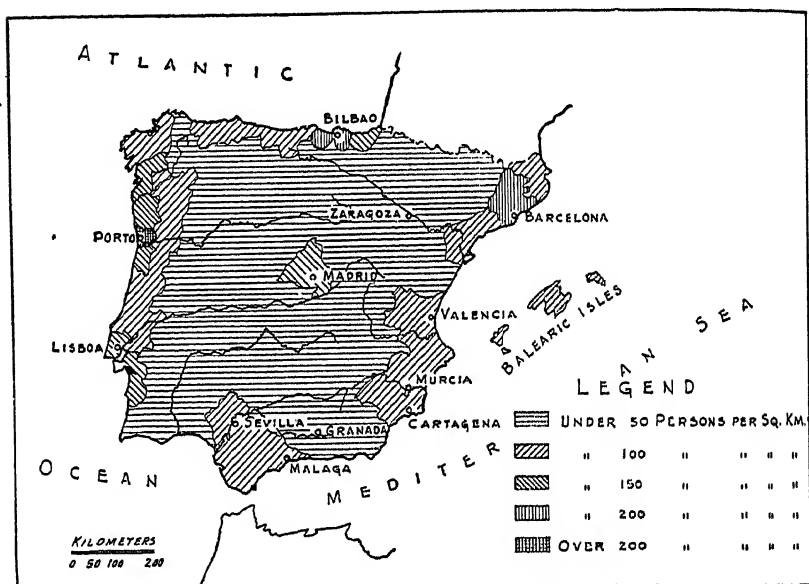
THE Iberian Peninsula has been cursed by a glorious history. Its daring explorers extended the borders of the known world to include a new hemisphere and new paths to the wealth of the Orient. Portugal conquered a mighty empire in the east, and within a single generation Cortez, Pizarro, de Soto and the rest of the *conquistadores* subdued a continent. Its empires were the richest and most extensive of their day. Into its ports proud galleons brought the spices of the Indies and the gold of the Incas. Thus the mother countries grew in wealth and power until they held a commanding position among the nations of the world.

But this glory faded all too quickly. In spite of exhausting wars, colonies fell away, and other nations replaced Spain and Portugal as leaders of the European world. The springs of imported wealth dried up, but the population developed no domestic sources to take their place. Intellectual leadership likewise declined, and in its stead tradition ruled and ignorance was rife. The people dreamed too much of the glories that had passed instead of facing the realities of the present and the future. The peninsula became a land of illiterate and poverty-stricken peasants ruled over by a monarchy which sought to perpetuate outworn forms and traditions. Little wonder that today it constitutes one of the most backward sections of Europe.

## POPULATION

**Characteristics.**—In general, the Spanish and Portuguese are members of the long-headed Mediterranean race, but there are many local differences in both race and culture. Such invaders as the Phœnicians, Carthaginians, Romans, Vandals, Goths and Moors have added new racial and cultural contributions in various regions, while the isolating influence of relief has tended to perpetuate sectional differences.

The highland areas of the north, from Asturias through the Pyrenees, are inhabited by a thrifty, hard-working group extremely proud of successfully preserving the germ of Spanish independence against the assaults of the Moors. The Basques of the western Pyrenees constitute one of the most active and capable groups in Spain. The Castilians, who occupy most of the central plateau, are a proud people, noted for their conservatism and culture. The Catalonians resemble the Provençal French in appearance and culture, and form the most active and progressive group in Spain. In Andalusia and the coastal areas of Murcia and Valencia, close contacts with the Moors and other peoples



The distribution of population in the Iberian Peninsula. (After Newbigin, modified.)

throughout the Mediterranean have led to a languorous, good-tempered and ready-witted population which is delightful but not particularly energetic. The northern Portuguese resemble the inhabitants of north-western Spain, but to the south infusions of Negro and Berber bloods have led to a mixed population of low standards.

Eight centuries of opposition to the Moors centered the interest of the Iberian peoples in warlike activities, led to a distaste for manual labor and for commercial and industrial activities, and bred a religious fanaticism which found expression in the Inquisition and in the expulsion of the Jews and the Moors. Emigration to the colonies and losses in the numerous European wars likewise sapped the strength of the

peoples by withdrawing the most ambitious and capable of each generation.

An additional handicap was the fact that the prevailing economic organization did not lead to the building up of a strong middle class which might have added much to the stability and prosperity of the states. The result of these various historical forces has been to reduce the efficiency of the population and to complicate the economic and political problems of the nations.

The cultural and economic standards of the present population are low. In 1930 some 65 per cent of the Portuguese and some 43 per cent of the Spanish population ten years of age or over could neither read nor write. Lack of education has meant a limited vision and interests. The great majority of the people have little knowledge of or interest in conditions outside of their immediate locality. The low economic standards are reflected in backward agricultural methods, in inefficiently exploited resources, and in the slight development of manufacturing. Both cultural and economic standards have been raised within recent years, but only a beginning has been made; and the two Republics have unlimited opportunities to be of service in both of these directions.

**Numbers and Distribution.**—Spain is one of the most sparsely populated nations of Europe. In 1930 its population was estimated at 23,903,000, or 123.1 per square mile. The majority of its people live on the lowlands bordering the plateau, where soil and climate are most favorable for agriculture. Portugal has a population of 6,717,000, or 187.2 per square mile. The great majority of its people are located in the wine areas of the north, the central and southern parts of the country being very sparsely settled.

TABLE 141  
OCCUPATIONS OF THE POPULATIONS OF SPAIN AND PORTUGAL<sup>1</sup>  
(percentage of total)

Occupation	Spain	Portugal
Agriculture and fishing.....	56.1	57.5
Mines and quarries.....	1.6	0.4
Industry.....	19.3	21.5
Commerce and transportation.....	7.8	9.1
Army and navy.....	2.6	...
Professions.....	3.1	1.6
Domestic service.....	3.7	7.8
All others.....	5.8	2.1
Total.....	100.0	100.0

<sup>1</sup> *Statistical Year Book of the League of Nations, 1931-32.*

The majority of the population of both countries is rural, and therefore resides in tiny agricultural villages rather than in large towns and cities. However, the gradual rise of manufacturing within recent years has caused the cities to increase in population much more rapidly than the country as a whole. At present, Spain has ten cities and Portugal two with a population of over 100,000.

### SITUATION AND BOUNDARIES

The French proverb, "Africa begins at the Pyrenees," illustrates the position of the peninsula between the two continents, and the effectiveness of the Pyrenees as a cultural boundary. It is a transition zone in which the cultures of Europe and Africa meet and mingle. Frequently the African influence has dominated, for the narrow Strait of Gibraltar is a less effective barrier than the high mountains to the northeast. These are young and rugged, and their compact longitudinal folds tend to make the peninsula the most isolated portion of Europe. Except in Catalonia, they form the linguistic and cultural as well as the political frontier. On the other hand, easy routes lead from Gibraltar to the fertile plains of Andalusia and thence to the plateau. The peninsula thus opens its arms to Africa, and has received gifts of flora and fauna as well as cultural and human contributions.

The peninsula is not well situated to play an important part in water-borne commerce. In fact, with the passing of the centuries its position in this respect has grown steadily worse. As long as the Mediterranean was the great sea of commerce, and the small boats of Phœnicia or Greece or Roma visited the northern European regions, the ports of the peninsula were active and the coastal areas were brought into close contact with the other portions of the Mediterranean. As long as the principal route to the east rounded Africa, and the chief trade with the New World was confined to the south, the Iberian peoples were likewise well situated to play an active part in commerce. However, with the rise of the North Atlantic routes, and later, with the construction of the transalpine railways, the peninsula lost its favorable situation, and its harbors became at best ports of call for ships entering or leaving the Mediterranean.

The relief of the peninsula and the lack of harbors likewise retarded maritime development. The peninsula has a remarkably even coast line, and the harbors are few and shallow. Many of those which were formerly important were rendered useless by silting, while the increase in the size of ships made it impossible to use others. Thus contacts with

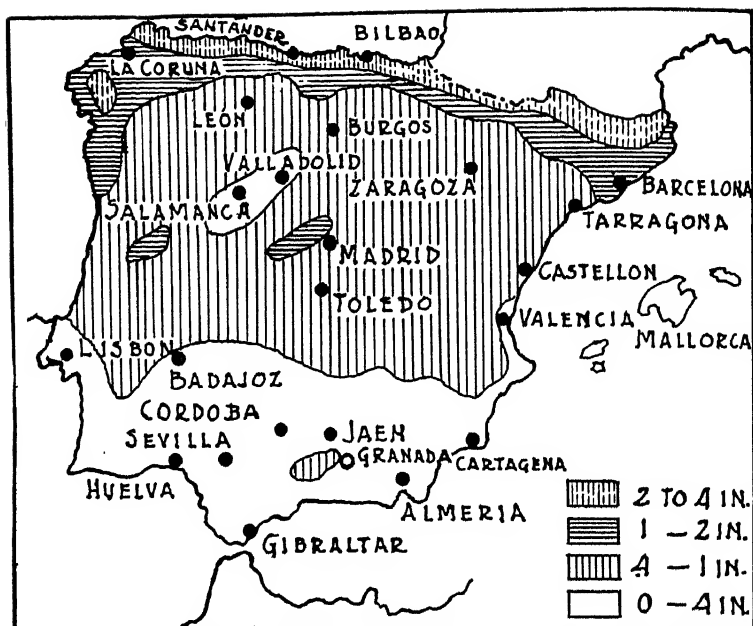
the sea have been few. Where coastal plains exist, they are usually narrow, and mountains or the abrupt edge of the plateau render contacts with the interior very difficult. The major portion of the population consequently had little interest in or knowledge of the sea. Even during the days of Iberian supremacy, and at the period when trade routes were most favorable, such maritime activities as were carried on seem to have been the result of a conscious effort rather than a natural growth. Only the people of the Portuguese plain have maintained an interest in the sea, and this consists largely in carrying on coastal trade. This lack of commercial interests and development has isolated the peoples of the peninsula culturally and economically, and has made it difficult for them to take advantage of such favorable locational factors as have existed.

### CLIMATE

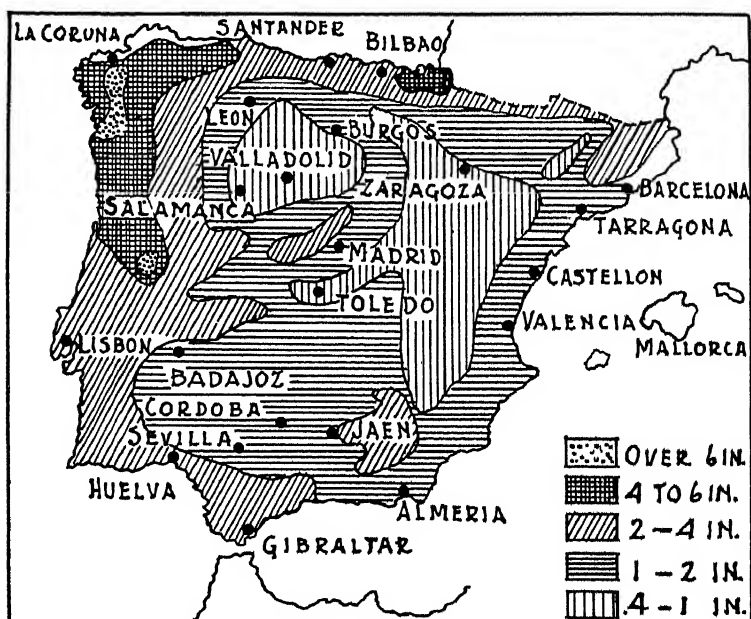
The location of the peninsula causes most of it to be within the dry horse latitudes and trades in the summer, and within the prevailing westerly belt in the winter. Rainfall is accordingly seasonal, coming largely during the autumn and winter. A deficiency of rainfall characterizes most of the land, and limits agriculture. In this the peninsula would seem to conform with the other Mediterranean lands. But in spite of the fact that the sea forms seven-eighths of the boundaries of the peninsula, bordering mountains and an average elevation of some 2200 feet restrict the moderating influence of the water, and give the greater part of the land a continental climate. Thus, in contrast to most Mediterranean lands, it is a region of extremes in temperature. However, relief and latitude cause the peninsula to be divided into four climatic zones, each of which has a distinct influence on vegetation and human development.

The highlands of the north and the northwest have a climate entirely different from the rest of the peninsula. Cool summers and mild winters, with heavy and evenly distributed rainfall, favor forest growth, the raising of forage crops, and dairying. The climate and the resulting types of agriculture thus resemble those of northwestern Europe. This same type of climate extends south along the western seaboard as far as central Portugal.

The "meseta" or plateau which occupies about three-fourths of the peninsula has an extreme continental climate, with light rainfall coming mostly during the winter. The rainfall is a little heavier in the northwestern portion of the plateau, and here is located the great



The distribution of average August rainfall in the Iberian Peninsula. (After R. Ballester.)



The distribution of average February rainfall in the Iberian Peninsula. (After R. Ballester.)

wheat-raising region of Spain. In the drier south and southeast esparto grass replaces wheat, and large areas of typical steppe appear. Everywhere, except on the higher elevations, lack of rainfall prohibits forest growth.

The eastern coast, north of Cape Palos, has a typical Mediterranean climate, with winter rainfall and high average temperature. The olive, the vine, the mulberry and citrus fruits, as well as winter grains, are characteristic of this region. Irrigation is necessary throughout much of the area, and water supply is the determining factor in the location of towns and cities.

South from Cape Palos to southern Portugal is a zone of African climate. It is a region of low humidity, intense summer heat and winter floods. This is the only portion of Europe where the date palm thrives.

TABLE 142  
CLIMATIC CONDITIONS IN REPRESENTATIVE IBERIAN CITIES<sup>1</sup>

City	Temperature (° F.)		Rainfall (inches)		
	January Mean	July Mean	January Mean	July Mean	Average Yearly
Santiago (Northwest).....	45.1	64.8	7.8	2.0	65.1
Madrid (Central).....	39.7	75.7	1.3	0.5	16.6
Barcelona (East coast).....	46.4	73.9	1.3	0.9	21.1
Sevilla (South).....	52.2	84.7	2.1	0.0	18.6

### GEOGRAPHICAL REGIONS

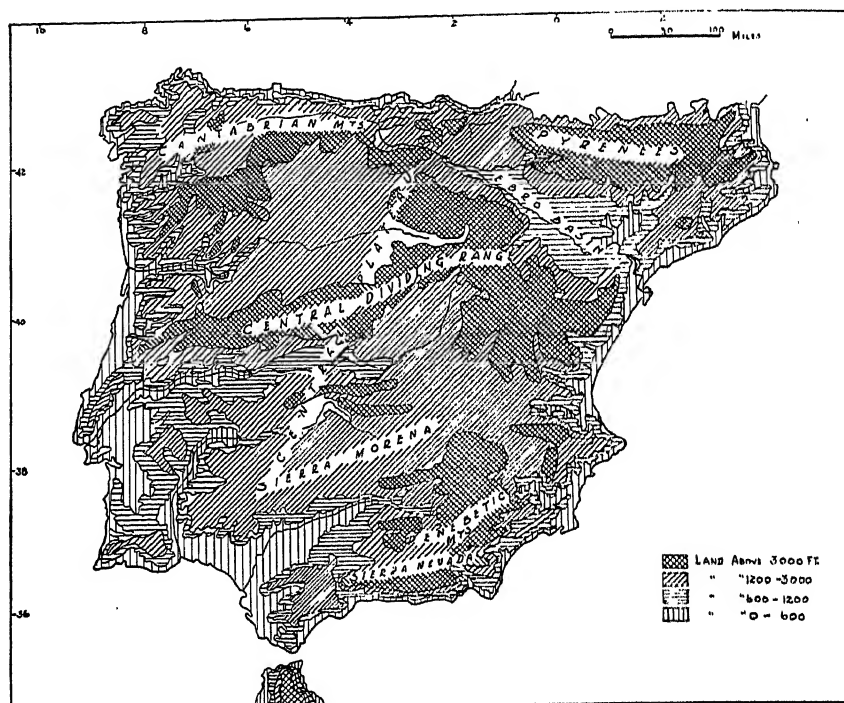
About three-quarters of the peninsula is occupied by a high, compact, abrupt-faced plateau, surmounted by numerous mountain ranges. This is bounded on the north by the young folded ranges of the Cantabrians and Pyrenees. To the south its own upturned edge, known as the Sierra Morena range, separates it from the Guadalquivir Valley. This valley is in turn bounded on the south by the Penebetic system of mountains which divides it from the Mediterranean. In southern Galicia the plateau reaches the Atlantic coast, but throughout most of its western margin it is separated by an escarpment from the plains of Portugal. These are the most extensive coastal plains of the peninsula. To the northeast the Ebro Valley separates the Pyrenees from the

<sup>1</sup> Kendrew, W. G., *The Climates of the Continents*, Oxford University Press, New York, 1927.



plateau, while to the east the latter drops abruptly to the narrow coastal plains of Valencia. These are continued to the north in the plains of Catalonia and to the south in the narrow plains of Murcia.

The Iberian Peninsula resembles Italy in the way in which relief and climate divide it into a number of distinct regions. The compact central plateau separates and isolates the bordering plains, and is itself cut off from contact with the sea by mountain barriers and abrupt



Relief map of the Iberian Peninsula.

slopes. Climatic differences tend to individualize further these relief divisions. A considerable development of internal commerce might have sprung up between these regions had not the difficulties of transportation and historic factors interfered. Lacking the uniting bonds of commerce, the people of each division developed their political and cultural organizations with little regard to their neighbors. Consequently, unity was difficult and the peninsula was long divided into a number of separate states. Even today provincial patriotism is often stronger than national patriotism, and the lack of unity decidedly complicates the problems of the nation.

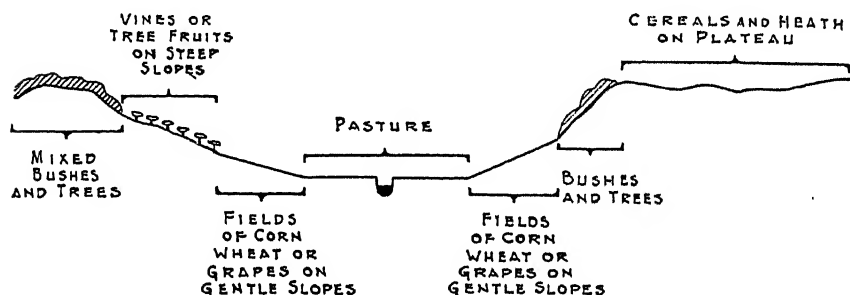
## NORTHERN IBERIA

**The Cantabrian Region.**—The Cantabrian ranges border the northern coast of the peninsula from the Atlantic to the Pyrenees, and are really a western continuation of the latter. Their rain-drenched northern slopes drop abruptly to the Bay of Biscay, leaving little or no coastal plain, and to the south they slope gradually to the level of the plateau. Although they are rugged and high, attaining a maximum elevation of nearly 9000 feet, numerous passes permit cross communication, and carry the rail lines from the plateau to the northern ports. The harbors are of a ria type, and are so handicapped by silting that constant dredging is necessary to keep them open. Most of the slopes support forests, which are of particular value in a land otherwise deficient in timber. In other sections they are clothed with luxuriant green grasses, which form ideal pasture for cattle and sheep, and cause transhumance to be an important phase of human development. The short rushing torrents of their northern slopes provide abundant water power which, combined with the moist climate, creates conditions which have favored the development of the textile industry.

*Galicia.*—Galicia occupies the northwestern corner of the peninsula, and consists of a series of rugged highlands forming the western end of the Cantabrian ranges and a northwestern extension of the central plateau. Level land is scarce, for the valleys are narrow and coastal plains are important only in the southwest. As a consequence, agriculture is limited, and consists largely of the intensive cultivation of corn and rye in the valleys and the pasturing of sheep and cattle on the slopes. Where the highlands meet the Atlantic, submergence has resulted in the formation of a large number of small harbors. In fact, Galicia has more harbors than any other portion of the peninsula. These, together with the inhospitable land, have turned the attention of the shore population to the sea. Here is to be found the only real seafaring group in Spain. The majority of these people are engaged in the sardine fisheries which center around Vigo and neighboring small ports. Although ports are numerous, rugged relief limits their contacts with the interior, and they are of but slight commercial importance. Vigo and La Coruña alone carry on much trade, and that is usually of a coastwise type. Unlike relief, the climate is highly favorable for both agriculture and human development. Rainfall is heavy, as much as 60 inches a year falling on some of the elevations, and it is evenly distributed. Temperatures are moderate, and storms are suffi-

ciently frequent to add stimulation to the climate. The same type of physical environment extends south into northern Portugal, although the percentage of level land is greater in that region.

The Galicians are closely related to the Portuguese in both language and culture and, due to isolation, they form the most backward group in Spain. The tiny peasant homes cluster together in small, dirty villages, and frequently house most of the domestic animals as well as the farmer and his family. Men and women alike till the cornfields on the valley floors, or care for the vineyards on the lower slopes. Hand cultivation is the rule, and is of a very intensive character, although because of backward methods the yields are very low. The dense population, together with these low standards, is responsible for continuous emigration, this region normally furnishing nearly half of all the emi-



Cross section through a valley in Galicia. (After S. Passarge.)

grants leaving Spain. Among the fishing population the economic and cultural standards are higher, and the coastal towns and cities are far superior to those of the interior.

*Asturias.*—The central portion of the Cantabrian range is largely occupied by the Province of Asturias. Here level land is even less plentiful than in Galicia, and agriculture is consequently less important. Here again corn and rye are raised in the narrow valleys, and cattle and sheep are grazed on the slopes. However, the importance of this central section lies in its minerals rather than in its agriculture.

*Minerals.*—Although its mineral wealth has frequently been over-emphasized, the peninsula contains a greater variety of minerals than other sections of Europe of equal size, and many of these are found in considerable quantities. Unfortunately, the lack of industrial development has retarded exploitation, and the mineral resources have not been as actively developed as in most other portions of Europe. For example, Spain ranks third among the European states in known iron

reserves, but ranks only sixth in production. Likewise, it ranks seventh in coal resources and only ninth in production.

The Cantabrian region furnishes approximately half of the iron ore and two-thirds of the coal mined in Spain. Here large deposits of each are located near tidewater, and are nearest to the great markets of northern Europe. The principal coal fields are located near Oviedo, and are benefited by the proximity of such ports as Gijón and Avilés.



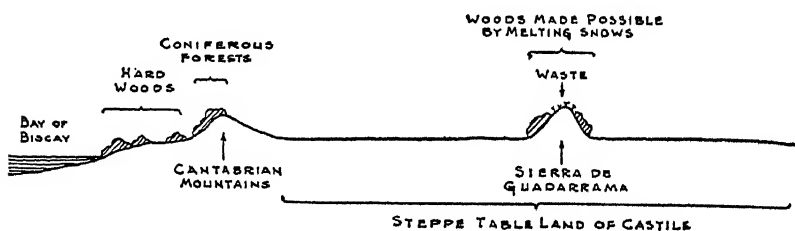
Peasant types in Asturias. (Courtesy of the Spanish American Society, New York.)

In spite of its considerable resources, Spain produces only some 7,500,000 tons of coal annually, while its consumption is over 8,000,000. Thus imports are necessary at present, but if the recent rapid increase in coal production is sustained, it is not impossible that the country may eventually produce a surplus for export.

The center of iron ore production lies farther to the east, near Santander. This region is responsible for over half of Spain's total production of some 6,500,000 tons. Only a small portion of the ore mined is used locally, but its excellent quality causes it to be in wide

demand, and much is shipped to the United Kingdom and other northern European countries. This region is also important for zinc mining, and a considerable quantity of this ore is exported through the ports of Santander and Bilbao. The latter, with a population of 160,000, is the principal port and the largest city of the northern coast. In addition to being of commercial importance, it engages in ship-building and metallurgical industries. Santander, which ranks second in commerce and size, is a large smelting center, and is the most rapidly growing city of Spain.

*The Eastern Cantabrians.*—The soils of the eastern end of the Cantabrians are more fertile than those of the central and western portions. This section also has the advantage of being less isolated than Galicia. Consequently, agriculture is of increasing importance,



Cross section of northern Spain. (After S. Passarge.)

and the tiny farming villages nestling in their green valleys appear prosperous as compared with those of the west. The peasants still use backward methods in the cultivation of their fields of wheat and corn, but greater fertility results in higher yields. Some grapes are raised on the lower slopes, but the section is especially noted for its apples and chestnuts. As throughout the entire Cantabrian region, the raising of livestock is one of the principal agricultural activities, and large numbers of cattle and sheep move back and forth between their summer and winter pastures.

*The Pyrenees.*—The Pyrenees stretch from Cape Cr  us to San Sebastian and cut the Iberian Peninsula off from the rest of Europe. They are young mountains, whose snow-clad peaks attain an elevation of some 11,000 feet. There are few low passes, and the compact longitudinal ridges form one of the most effective barriers to transportation to be found on the continent. They are crossed by only one railway, which was completed in 1928, but its steep grades make it expensive to operate. However, narrow coastal plains at either end provide the routes carrying the principal rail lines between France and Spain.

Even these plains are so narrow that they have retarded any extensive cultural penetration, except in Catalonia.

The population is most active and highly developed at the eastern and western ends, where contacts with the outside have been easiest. The isolation of the mountain valleys is well illustrated by the half million Basques who have preserved their ancient language and customs through countless centuries, and by the little state of Andorra, which succeeds in maintaining its independence and in retaining its feudal organization. The Pyrenees are economically unimportant. Except in the extreme east, the upper slopes are clothed with forests of pine and spruce, and the lower slopes support groves of chestnut and beech. However, the lack of transportation facilities renders this timber of little importance except for supplying local needs. The streams which tumble from its slopes are rich in potential water power, but, except toward the west, they are only slightly developed due to the lack of nearby markets for the power. Nevertheless, they are important as sources of water to irrigate the arid portions of the Ebro Valley and the Catalanian coast.

The majority of the population is engaged in agriculture. Hardy grains are raised in the valleys under a laborious system of hand cultivation. Apple orchards are almost a universal feature around every little agricultural village, and a few other hardy fruits are raised. Stock-raising is the principal agricultural activity. Large flocks of sheep are driven up into the high mountain pastures in the summer, and brought down into the valleys in the winter. Cattle are also raised, both for dairy and for draft purposes, and oxen are the principal beasts of burden.

#### THE CENTRAL PLATEAU

Three-quarters of the peninsula is occupied by the central plateau known as the meseta. Mountains or abrupt slopes bound it on all sides, and are responsible for its relative isolation. The plateau itself contains numerous mountain ranges, the most important of which is known as the Sierra de Guadaramma, or the Central Dividing Range. This separates the northern basin drained by the Duero (Douro) from the southern basin drained by the Tajo (Tagus) and the Guadiana. The plateau slopes gently to the west, so that the water parting is near its eastern edge. Its rivers are thus long and empty into the Atlantic, but low water in the summer handicaps their use, while any transportation

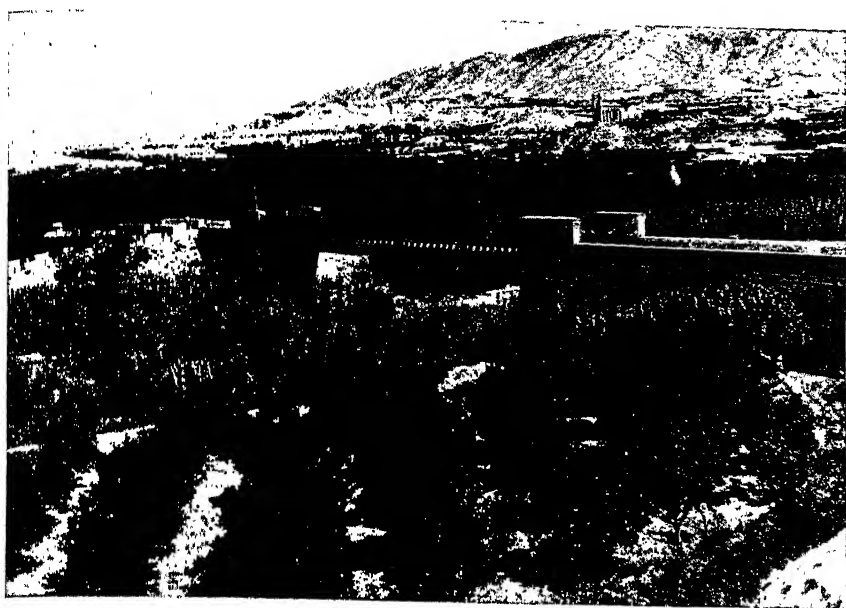
contact with the Atlantic is broken by their fall over the western escarpment.

It is a region of desolate rolling plains separated by barren mountains. Due to its average elevation of some 2600 feet, it has an unpleasant continental climate which increases in extremes toward the south. Although much of its soil is fertile, it is treeless and supports only a scanty growth of coarse grass owing to its low rainfall. To the south large areas of saline steppe present a picture of complete desolation. Little wonder that this is the most sparsely populated portion of the peninsula.

The scattered population is engaged almost entirely in agriculture. The northern basin with its greater rainfall is a land of wide wheat fields separated by arid and uncultivated areas whose short spring pasture season supports large flocks of merino sheep. This region produces about one-fourth of all the wheat in Spain, and the wool production is still large, although declining. In the southern basin greater aridity causes wheat to be produced in smaller quantities, but it is still the leading crop. The higher temperatures, however, are more favorable for the vine, and this region is responsible for nearly one-fourth of the Spanish wine production. Here again sheep are grazed on the steppe vegetation, but have to be taken up into the highlands to escape the summer drought. Over wide areas esparto grass, which was formerly important for the manufacture of paper, forms the only vegetation. Where water is more abundant near the base of the mountains, or where irrigation is resorted to in a few of the river valleys, cultivation is much more intensive. In such areas cattle are grazed, truck farming is carried on, and wheat and the vine and the olive are raised.

The population of the plateau is scattered, and cities are few. Most of the peasants live in small, dreary villages of adobe brick, built around the ever-present church or cathedral. These villages are far apart, and seem almost lost in the immensity of the surrounding plains. Madrid is both the largest city of Spain and the only city of the plateau with a population of over 100,000. Its situation near the exact center of Spain caused it to be selected as the national capital following the establishment of unity. Although it is a leading railway center and is active in commerce, it owes its importance and size to its political position. Valladolid is the leading city of the northern basin. Its control of great cross-routes has made it an important railway and commercial center, and its location in the midst of an important agricultural district causes its people to engage in such activities as flour milling and leather manufacturing. In the southern basin lies Toledo, the historic

and cultural center of Castile. Strategically it has long been important, for it controlled the point where the principal route from the Guadalquivir Valley to the northern basin of the plateau crossed the Tajo. Consequently, it witnessed some of the most important battles between the Spanish and the Moors. Today its position as the ecclesiastical center of Spain serves to preserve something of its former importance, but economically it has declined.



Landscape in the southern part of the central plateau. Note the irrigated orchards in the foreground. (H. J. Smith.)

#### THE EASTERN LOWLANDS

The eastern coastal plain brings one back to the Mediterranean world. Its abrupt mountain background and its delightfully mild and sunny climate with the summer drought remind one of Tuscany or French Provence. The resemblance is heightened by its vineyard- and olive-clad slopes, its carefully tended irrigated valleys, and its dense and active population. Here also are busy ports and old and important cities. However, it has an advantage over most of the Mediterranean areas in that its bordering highlands contain considerable mineral wealth.

This region is separate and distinct from the rest of the peninsula, not so much because of its physical differences as because of its popu-



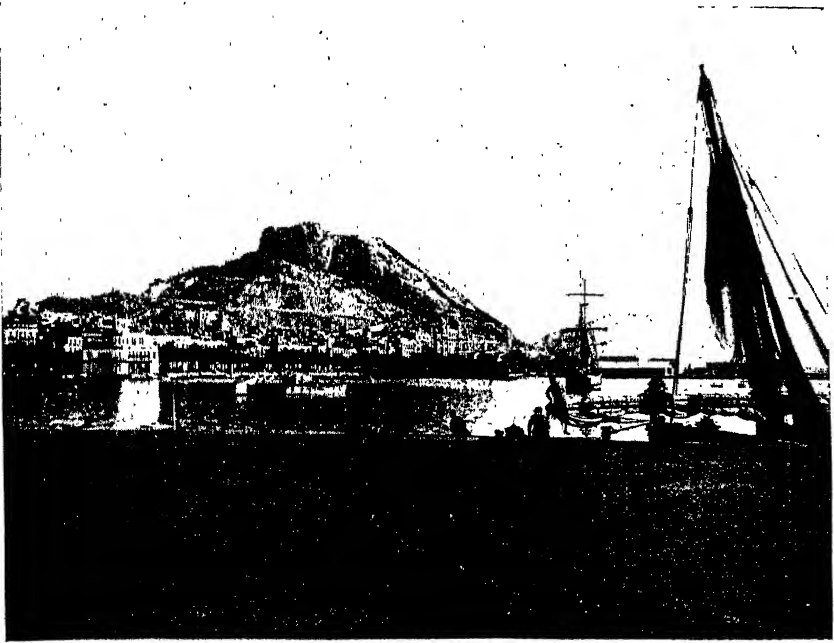
lation. It is the land of the Catalans, whose language resembles Provençal more than Spanish, and who have preserved their own distinct customs and dress. For centuries they have refused to call themselves Spaniards, and have created serious difficulties for the Madrid government. However, they form a valuable element of the nation's population, for they are industrious, enterprising and energetic, and they have made the area which they inhabit one of the most productive and progressive in Spain.



The village of Sallent near Barcelona. (Courtesy of the Spanish American Society, New York.)

The coastal plains are formed of alluvial material washed down from the highlands, and are very fertile. Where water is available, they are irrigated and intensively cultivated. Such typical Mediterranean crops as the olive, the mulberry, the almond, citrus fruits, winter grains and vegetables are raised. Due to the long growing season and great fertility of the soil, three and four crops can frequently be raised each year. However, the most important product is the vine, this being the leading wine-producing region of Spain. In the non-irrigated areas and on the slopes, the better lands are devoted to wheat and barley, while others are given over to the grazing of sheep and goats.

The population of this region is very dense, and the towns are close together. Many of them are very picturesque, with their white-walled, flat-roofed houses clustered together on some precarious crag or nestling in the midst of their green irrigated gardens. Two cities of major importance lie along this coast. Toward the north is Barcelona, the second largest city of Spain and the chief port of the region. However, its greatest importance is in manufacturing, and it is the most active and progressive industrial center in the country. Its bordering highlands contain a plentiful supply of such minerals as lignite, lead



The port of Alicante. (Courtesy of the Spanish American Society, New York.)

and zinc, and into its port come coal, raw textiles and timber. The city leads all Spain in the output of its textile mills, and it is also actively engaged in the production of iron and steel, leather goods and timber products. Toward the south is the attractive city of Valencia, with its Moorish architecture and avenues of palm trees. Through its port pass the iron from the neighboring highlands and the agricultural products of its fertile plains. Numerous textile and food industries have sprung up and have aided it in becoming the third largest city in Spain.

This region also includes the Ebro Basin, which lies between the Pyrenees and the Iberian range, and is cut off from the coast by the Catalonian Mountains. With an area of 38,600 square miles, it forms

one of the largest lowland regions in Spain; but unfortunately the surrounding highlands shut out the rain-bearing winds, and the whole basin is extremely dry. Where irrigation is possible, large quantities of wheat, sugar beets, olives and the vine are raised. The cultivation of these irrigated districts is very intensive, so that the yields are high. This valley provides an easy approach to the plateau. It was the route followed by the Romans in their invasion of the peninsula, and today it carries railway lines connecting with the north coast and with the valleys of the Duero and the Tajo. Its principal city is Zaragoza (Saragossa), the capital of Aragon and the terminus of one of the principal routes leading over the Pyrenees.

#### THE SOUTHERN LOWLANDS

The dry scorching summers and winter floods of the south really mark an extension of Africa into the continent of Europe. Little wonder that the Moors felt most at home in this region, and made here their last and most determined stand. The date palms of the southern coast and the olive trees of the parched slopes must have reminded them of their former homes. The Moors did much for this region, as they did for all of Spain. They introduced irrigation, and thus changed the barren plains into productive gardens. They introduced the orange and the mulberry, and gave Spain her famous mules and merino sheep. In addition, they developed the mineral resources of the mountains, and built up thriving industrial and commercial centers.

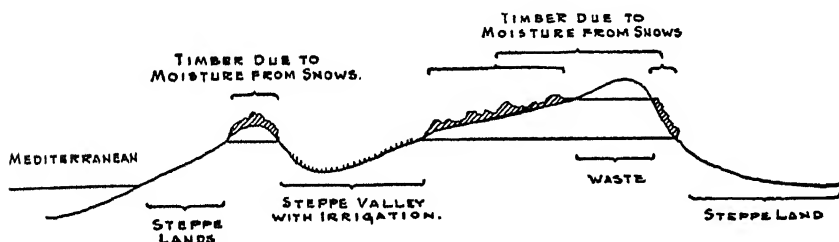
The southern lowlands consist of three divisions. Along the coast is a narrow plain, broken occasionally where the highlands reach the sea. To the north of this is the Penebetic chain of mountains, which reach their maximum elevation in the snow-clad summits of the Sierra Nevadas. These mountains are a continuation of the Atlas system of Africa, and are rich in minerals. Iron, copper, lead, zinc, manganese and other minerals are found in commercial quantities. To the north of these highlands lies the basin of the Guadalquivir, the most productive lowland district in Spain.

On the fertile alluvial soils of the coastal area the population carries on much the same type of agriculture as is to be found along the eastern coast. Such products as olives, oranges, lemons, grapes, sugar cane, rice, and other sub-tropical crops are raised by the use of irrigation. The population is somewhat less energetic and efficient than that of the east coast, and, in spite of the intensive cultivation, the crop

yields are smaller. Such ports as Cartagena, Almería and Málaga are active in the export of wine and olive oil, as well as iron, lead and other mineral products.

Sheep are grazed on the highland slopes, and the larger and more fertile of the mountain valleys support important towns and cities. In such a valley of almost incredible fertility and beauty is located Granada, the old Moorish capital. Here sits the Alhambra, or palace of the Moorish kings, which testifies to the cultural heights which those people attained.

The basin of the Guadalquivir occupies the depression between the Sierra Morena and the Penebetic ranges. The soils washed down from these bordering highlands are extremely fertile, and aid materially in the productivity of the region. Still more important, however, is the fact that the valley lies open to the winds of the Atlantic, and therefore receives more rainfall than most sections of Spain. Being

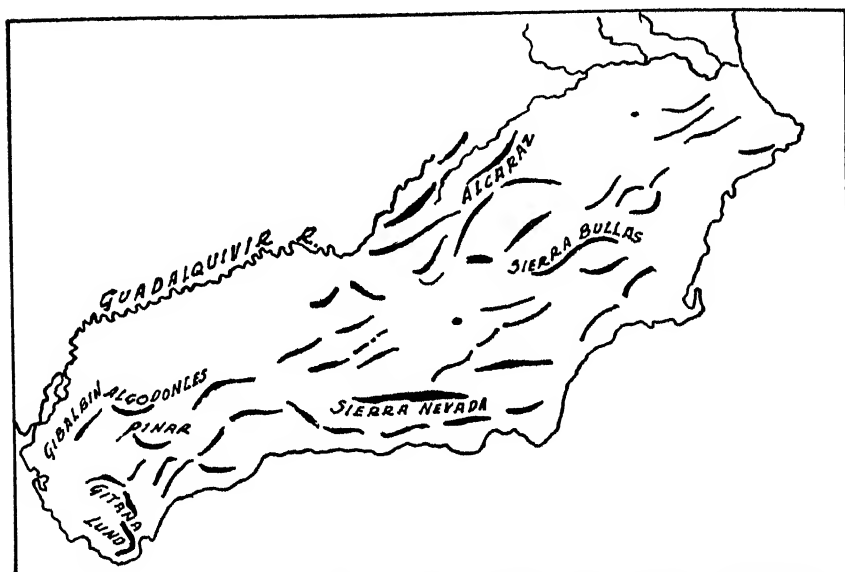


Cross section through the Sierra Nevada in southern Spain. (After S. Passarge.)

productive and isolated, the valley developed an early civilization; but today its population, although delightful, is indolent, and economic and cultural life is backward.

A wide variety of crops and animals is raised throughout the valley. In its upper portion much land is devoted to grazing, and a considerable number of cattle are raised. But here, as elsewhere throughout Spain, much of the best land is devoted to the raising of fighting bulls, and is consequently of little economic importance. Wheat, barley and corn are grown along the river plain, while the slopes support important vineyards. Oranges are also much at home in this climate, and the valley leads Spain in the production of this fruit. The most characteristic crop is the olive, the basin of the Guadalquivir being responsible for over 40 per cent of the entire Spanish production of olive oil. Truly this would seem to be the part of Spain most favored by nature, and, if man were to utilize its resources efficiently, it might become one of the most productive regions of Europe.

Although the majority of the people live in small villages, the valley contains several cities of importance. Sevilla (Seville) is the fourth largest city in Spain, and is the principal commercial and manufacturing center of the basin. It is one of the great tidal ports of the country, although constant dredging is necessary to keep an open channel to the sea. The danger of flood is its principal handicap, for around and below this point the river meanders its way through low marshes which are liable to flood in periods of high water. However, it has many advantages. To the west lie the great copper deposits of Huelva, and to the north, in the Sierra Morena range, lie valuable



The major divisions of the Penebetic System. (After R. Ballester.)

beds of iron ore. Both of these metals are exported through Sevilla. It is likewise the commercial center for the leading agricultural section of the valley, and exports much of the olive oil for which this region is so famous. Industries occupy the attention of many of its people, and it is noted for its leather work, porcelain and cigars. The city has an ideal winter climate, and during that period life is most active, its gardens most beautiful, and its festivals most frequent.

To the south of the mouth of the Guadalquivir, Cádiz overlooks its magnificent bay. But in spite of its excellent harbor, its trade has declined, owing to the deepening of the channel to Sevilla and to the substitution of Gibraltar as a port of call for many ships.

## PORTUGAL

Most of Portugal lies between the western edge of the plateau and the Atlantic. To the north it consists principally of highlands, a portion of which is a western extension of the central plateau. In the south plains predominate, although occasional highland areas appear. The whole area lies open to the winds of the Atlantic, and enjoys more rainfall and less seasonal variations in temperature than most of the rest of the peninsula. This favorable climate and the large areas of level land provide conditions well suited for agriculture. Like Spain, it contains a considerable variety of mineral wealth. Iron, tin, wolfram, copper, and tungsten are all found in commercial quantities. While its harbors are not numerous, some, such as Lisboa (Lisbon) and Pôrto (Oporto), are excellent, and provide outlets for the products of the country.

In spite of these natural advantages, the nation is the most backward in Europe. The most capable people live in the densely settled northern section, but the mixed population of the south is extremely backward. In spite of the fact that the great majority of the population of the country is engaged in agriculture, over half of the total area is uncultivated. This is due partially to lack of initiative and partially to inadequate transportation facilities. Even in the cultivated areas methods are primitive and yields low. As a consequence, the nation does not produce enough to feed its own people, and considerable amounts of food must be imported each year.

Wheat, corn and rye are the principal cereal crops, and are most important to the south of the Tajo. However, the vine and the olive are the most characteristic products. Wine and olive oil form important exports, but the latter suffers from primitive methods of manufacture. The port wines of the north are of excellent quality, and are in wide demand. The cork oak is common to nearly all sections of the country, and Portugal normally furnishes nearly half of the world's supply of cork. The oak forests also provide food for a considerable number of swine, and sheep are grazed on the highland areas, especially in the north.

Lack of transportation facilities and backward economic conditions have handicapped the development of mineral wealth, and what exploitation takes place is carried on principally by foreigners.

Fishing ranks next to agriculture in importance, and furnishes about one-fifth of the nation's exports. A portion of the shore popula-

TABLE 143  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS IN PORTUGAL, 1930  
(U. S. Department of Commerce)

Crop	Acreage (thousands of acres)	Yield (thousands of units— bushels, except as noted)
Wheat.....	1,104	13,531
Rye.....	577	4,863
Barley.....	186	1,958
Oats.....	519	7,723
Corn.....	868	16,722
Grapevines.....	860	155,652 <sup>a</sup>
Olive oil.....	...	3,417 <sup>b</sup>

<sup>a</sup> Unit, gallon of wine.

<sup>b</sup> Unit, gallon of oil.

tion has long been interested in the sea, and, in addition to fishing, a considerable coastwise trade is carried on.

Lisboa, the capital, with a population of slightly over 500,000, and Pôrto, with a population of 227,000, are the only two large cities. In addition to being the leading ports and commercial cities of the nation, they both contain numerous industries. Most of these are concerned with the preparation of local agricultural products, such as wine and olive oil, and with the spinning and weaving of cotton and other textiles.

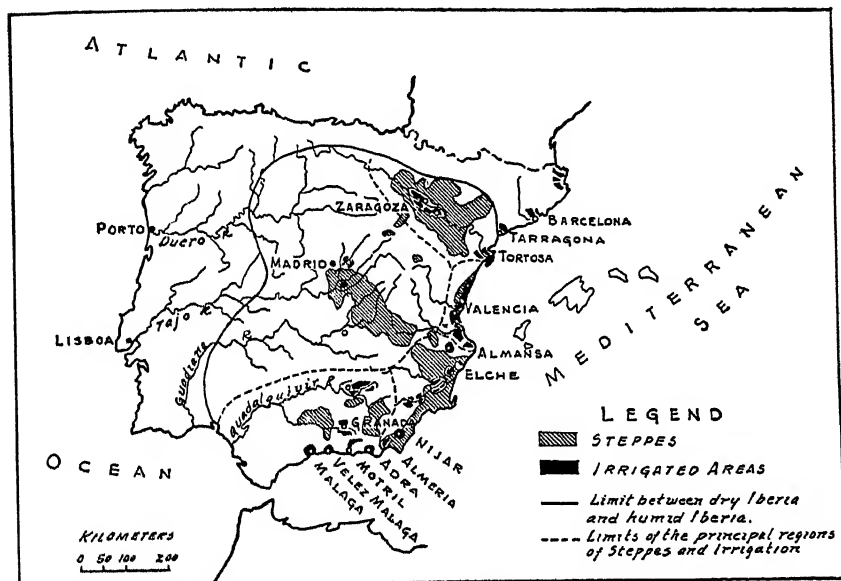
#### AGRICULTURE OF THE PENINSULA

Although the major portions of the populations of both Spain and Portugal are engaged in agriculture, neither country produces sufficient food to meet its own needs. This condition is the result of a combination of physical and human factors which merit attention because of their influence on the prosperity of the entire peninsula.

Numerous mountains limit the amount of level land and isolate many regions. Scanty rainfall retards cultivation to such an extent that water supply may be said to be the greatest controlling factor in the distribution of agriculture. But important as these physical limitations are, they do not adequately account for the fact that only some 29 per cent of the area of the peninsula is under cultivation, although nearly twice this area is capable of being cultivated. Neither do they fully explain the fact that 25 per cent of the area of Portugal and 30 per cent of that of Spain are classified as waste land. They also only partially explain the low yields per acre which have long characterized

Iberian agriculture. It would thus seem necessary to examine the human factors which limit production in order to get a complete explanation of the present situation.

The lack of transportation facilities has limited agriculture in many areas. The existence of large estates has resulted in a class of landless tenant farmers who have had little interest in maintaining the fertility of the soil, and who have done little to improve agricultural production. The lack of capital for the purchase of fertilizers and agricultural machinery has likewise been a retarding factor, but undoubtedly the



Irrigated and steppe regions of the Iberian Peninsula. (After Brunhes, modified.)

most important has been the backwardness of the peasants. Many are illiterate and extremely conservative. Few have any knowledge of improved agricultural methods, while others seem to lack the ambition and energy necessary to improve their lot. These and perhaps other human factors must be considered along with the physical in explaining the present condition of Iberian agriculture.

Despite the backward condition of its agriculture, the Iberian peninsula ranks high among the European powers in the production of certain crops. About one-third of all the cultivated land is devoted to cereals. The rye and corn of the north and northwest and the oats of the southern irrigated areas are of slight importance, but the winter wheat and barley of the dry regions are raised in large amounts.



Most of these latter two grains are produced on the plateau by dry-farming methods, and are grown in sufficient quantities to enable Spain to rank fourth among the European powers in the production of each.

TABLE 144  
ACREAGE AND PRODUCTION OF PRINCIPAL CROPS IN SPAIN  
(U. S. Department of Commerce)

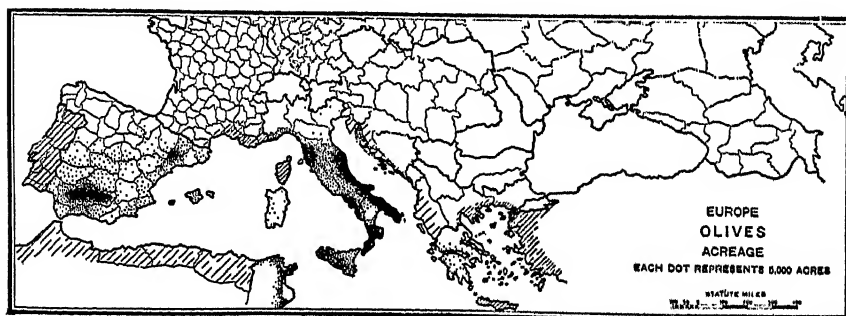
Crop	Acreage (thousands of acres)		Production (thousands of units— bushels, except as noted)	
	1909-1913	1926-1930	1909-1913	1926-1930
Wheat.....	9,547	10,647	130,445	141,908
Barley.....	3,510	4,462	74,691	93,961
Rye.....	1,988	1,607	27,636	21,609
Oats.....	1,276	1,869	29,110	42,034
Corn.....	1,134	1,037	26,548	23,294
Sugar beets.....	89	168	861 <sup>a</sup>	1,736 <sup>a</sup>
Olive orchards.....	3,536	4,248	63,813 <sup>b</sup>	101,639 <sup>b</sup>
Grapevines.....	3,158	3,409	392,646 <sup>c</sup>	537,053 <sup>c</sup>

<sup>a</sup> Unit, metric ton.

<sup>b</sup> Unit, gallon of oil.

<sup>c</sup> Unit, gallon of wine.

In addition to cereal production, the peninsula also ranks high in the production of such special crops as the vine, the olive and the



Spain ranks second to Italy in the acreage devoted to the olive tree but ranks first among the European countries in the production of olive oil. (U. S. Department of Agriculture.)

orange. The area devoted to vineyards is approximately equal to that of France or Italy. However, the yield per acre is low as compared

with the other two powers, and it consequently ranks third in wine production. Spain ranks next to Italy in the area devoted to olives, but holds first place in the production of olive oil. It also normally ranks first among the European countries in the total yield of oranges, and is an important producer of other types of citrus fruit.



The iron ore reserves of the Iberian Peninsula. (U. S. Geological Survey.)

Considering the vast areas classified as meadow and pasture, a relatively small number of livestock are raised throughout the peninsula. Sheep are the most numerous, Spain ranking third among the European powers in the number raised and second in the number per capita. The ass and the mule are likewise plentiful, and constitute the most usual beasts of burden. Cattle and swine are raised mostly in the humid regions of the north and west, but neither animal is found in large numbers.

## THE MINERALS OF THE PENINSULA

The most important mineral deposits of the peninsula occur around the edges of the plateau, where it is joined by the folded mountains. They are thus frequently close to tide-water, and well situated for export. This is fortunate, for the lack of capital and domestic industries has caused many of the deposits to be exploited by foreign capital for the purpose of supplying foreign industry. This system has the advantage of utilizing many resources which would otherwise lie idle, but it has at least two major disadvantages. It results in the exploitation and frequently the exhaustion of those deposits lying near the coast, but entirely neglects the interior deposits. Furthermore, under this system production depends upon conditions in foreign markets, and fluctuates widely from year to year.

Spain ranks moderately high among the European powers in the production of numerous minerals. It occupies first place in the mining of such metals as copper, lead and mercury; sixth place in the mining of iron ore, and ninth place in the production of coal. Mercury is produced chiefly in the famous Almaden mine of south central Spain, although smaller deposits occur in other regions. The principal lead mines are located in the south, between the Sierra Nevada and the Sierra Morena. Copper comes from the Huelva district of southwestern Spain, and wolfram is mined in Portugal and western Spain. Most of the coal and iron ore come from the mountains bordering the northern and southern edges of the plateau, although sizable deposits are to

TABLE 145  
MINING AND METALLURGICAL PRODUCTION IN SPAIN  
(U. S. Department of Commerce)

Product	1913	1925-1929	1930
Coal and lignite, 1000 met. tons.....	4,293	6,958	7,650
Iron ore, 1000 met. tons.....	9,862	4,981	5,480
Pig iron, 1000 met. tons.....	425	582	595
Steel, 1000 met. tons.....	238	723	860
Copper (mine production), met. tons.....	.....	56,626	59,000
Lead (smelter production), met. tons.....	198,829	144,161	123,263
Zinc (smelter production), met. tons.....	6,003	14,618	10,697
Mercury, met. tons.....	1,246	2,007	663
Superphosphates, met. tons.....	185,860	856,813	999,667
Cement, 1000 met. tons.....	512	1,427	1,839

be found in other sections. Other minerals are widely scattered, and almost no portion of the peninsula is without some mineral wealth.

### MANUFACTURING IN THE PENINSULA

In spite of varied mineral wealth, important agricultural raw materials and high tariff barriers, manufacturing is of slight importance in the Iberian Peninsula. It provides employment for only a small portion of the population, and its output is not sufficiently large to supply domestic needs. The principal products in order of their importance are cotton goods, paper, glass, sugar, cork products, silk and metallurgical products. Barcelona and the surrounding area produce over three-fourths of the cotton textiles of Spain. This district also manufactures considerable amounts of paper, leather and metallurgical products. It owes its importance to a dense and capable population, an excellent harbor, local mineral resources and the abundant water power of the Pyrenees. The principal iron and steel and metallurgical district of Spain is located in the north, with Bilbao and Santander as its centers. Agricultural raw materials are manufactured near the source of supply. Thus Sevilla is the greatest center for the rendering of olive oil, and such cities as Valladolid, Madrid and Cordoba are noted for their leather. Lisboa is the principal industrial center of Portugal, and is especially important for its cotton textiles.

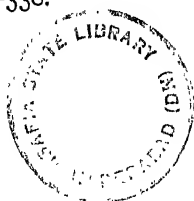
### FOREIGN TRADE OF SPAIN AND PORTUGAL

In spite of its retarded economic development, Spain had a per capita foreign trade of \$40.50 in 1930, which placed it ahead of all the other Mediterranean powers in this respect. Portugal lags considerably behind, its per capita trade amounting to only \$22.60 in 1930. The slight development of manufacturing is reflected in the fact that both countries are primarily concerned in the importation of manufactured goods and the exportation of foods and industrial raw materials. For example, in 1930 manufactured and partly manufactured goods made up 84.2 per cent of all Spanish imports, while foods and industrial raw materials made up 76.7 per cent of the nation's exports. In the same year the leading individual import items were chemicals, machinery, raw cotton, mineral oils, lumber and automobiles; and the leading export items were oranges, olive oil, wines, cotton goods, cork and fish. A like situation exists in Portugal, and reflects a similarity of products and stage of economic development. The greatest

markets for Spanish exports are to be found in France, the United Kingdom, the United States, Germany and the Argentine. The same countries also provide most of the Spanish imports. The United Kingdom is the leading nation in the trade of Portugal, and is followed in this respect by Germany, France and the United States. Both nations normally have an import balance of commodities, and within recent years this has seriously complicated their financial positions. In both cases strenuous efforts are being made to increase foreign trade, especially with South America, but so far these efforts have met with little success.

## BIBLIOGRAPHY

- Ballester, R., *Geografía de España*, Talleres Gráficos de la Sociedad General de Publicaciones, Barcelona, 1926, 3rd edition.
- Blanchard, W. O., "The Cork Oak," *Journal of Geography*, 1926, vol. 25, pp. 241-249.
- "Spanish Ore for European Steel," *Journal of Geography*, 1927, vol. 26, pp. 254-262.
- Blanchard, W. O. and Blanchard, E. R., "The Grape Industry of Spain and Portugal," *Economic Geography*, 1929, vol. 5, pp. 183-193.
- Cunningham, C. H., and Copp, P. M., "Portugal; Resources, Economic Conditions, Trade and Finance," *Trade Information Bulletin No. 455*, U. S. Department of Commerce, Washington, 1927.
- "Spain," *Trade Information Bulletin No. 243*, U. S. Department of Commerce, Washington, 1924.
- Gracey, W. T., "Olive Growing in Spain," *U. S. Special Consular Report 79*, Washington, 1918.
- Koebel, W. H., *Portugal, the Land and People*, A. Constable & Co., London, 1909.
- Muirhead, F., *Southern Spain and Portugal*, Macmillan & Co., Ltd., London, 1929.
- Peirs, E. A., *Spain*, Dodd, Mead & Co., London, 1930.
- Thompson, W., "Portugal—The Country and the People," *Geographical Review*, 1918, vol. 6, pp. 147-155.
- Unstead, J. F., "Geographical Regions of Iberia," *Scottish Geographical Magazine*, 1926, vol. 42, pp. 159-170.
- Visher, S. S., "Regional Geography of Iberia," *Journal of Geography*, 1922, vol. 21, pp. 325-338.



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